

THE COMPASS OF *Philosophy*

AN ESSAY
IN
INTELLECTUAL ORIENTATION



NEWTON P. STALLKNECHT
Indiana University

ROBERT S. BRUMBAUGH
Yale University



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COMPASS OF PHILOSOPHY

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Preface

The authors offer this book to the beginning student and the general reader as a series of exercises in philosophical reflection. In this way we hope to acquaint the reader with the several persistent modes of thought that have characterized the practice of philosophy over the centuries. We are working from the assumption that the tangled multiplicity of philosophical systems that have arisen in the West may be classified under four general types, although we are ready to admit that certain famous systems are based on a blending or fusing of at least two types. The four types or modes of thought appear not only in academic philosophy but in other areas of intellectual enterprise, both theoretical and practical: scientists, historians, artists, and statesmen as well as philosophers have accepted one or another of these patterns of interpretation and have oriented their work accordingly.

As this program indicates, we consider philosophy to be a speculative enterprise, not simply an analytic or methodological one. We believe that the traditional problems of speculative philosophy are interesting and meaningful. We have concentrated on such problems because they are most easily recognized as philosophical and are usually the most interesting to the beginner, as also frequently to the advanced student. However, since philosophies are not catalogues of doctrines or even of problems, but rather organized systems of thought, we have tried throughout to make clear the effect of systematic context on the formulation and the resolution of particular problems.

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We are also committed to the notion that disagreement in philosophy arises because philosophers discuss the same things from different points of view. This book tests that assumption. If we are right, and differences arise from divergences of perspective or standpoint, then it should be possible to construct a compass and a map that will show systems changing systematically and predictably as we move from one point of orientation to another. The assumption that there is "one world" open to several distinct points of view has usually been made rather uncritically and has not been thoroughly tested in the history of philosophy, despite its importance and frequent occurrence. Thus the exercises in philosophical reflection that we are inviting the reader to share have constructive significance. A desire to test the notion of a basic agreement or a common intention among philosophers leads us to isolate and emphasize the most important and diverse types of philosophical systems, and our classification is the best way we have found of describing the situation.

A working hypothesis such as this may or may not be ultimately satisfactory as a thesis in the history of ideas. For the present authors, it remains an adventure in interpretation that we have found of considerable value in teaching and in research. Thus we are inviting the reader, who is presumably without prior experience in philosophy, to think his own way through each of these four typical systems, to explore, so to speak, from the inside, their implications and their assumptions, thus coming upon the major problems and difficulties, the strength and the weakness of each. We have treated each of the four systems as a typical mode of orientation without trying to identify it closely with the work of any single historical thinker; nor have we tried to present each system exhaustively or in minute detail. In each case we have offered the student a point of view from which to work, not a closed system of ideas. In the end, the student must seek his own orientation. After all, every student of philosophy whose interest endures must finally become his own teacher. In the meantime, however, the exercise offered here will

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afford him his first opportunity to read his charts and box his compass before he undertakes an independent voyage of his own.

The following table indicates the four types of speculative system to be examined.

•	Formalism The Platonic Tradition	
Mechanism, Discrete or Atomic Pluralism: Materialism and Sensationalism		Philosophy of Creation: Bergson, Whitehead, and the Existentialists
•	Naturalism or Vitalism The Aristotelian Tradition	
•		

Some attention must also be paid to movements that deny the possibility of speculative philosophy. These movements can be characterized as either positivist or mystical in nature.

We may comment upon the four chief types of speculative thought as follows

Discrete or Atomic Pluralism or Mechanism need not involve a theory of physical pluralism; the discrete elements may be of a very different sort. Hume comes to mind here, but his skepticism makes it difficult to consider him as a speculative thinker. Thus, for example, the materialism of Democritus and among others the sensationalism of Berkeley may be considered under this heading. The mechanist philosopher thinks of his world as composed of many "least parts," discrete and disparate. Things are thought of as models or constructions made up of many such parts in combination. Such philosophy often appeals to the technician and the engineer. It is a philosophy of construction or manipulation.

Formalism at once recalls the philosophy of Plato. The imagination of the philosopher turns from the model made up of discrete parts to the diagram or formal pattern. This is the point of view of the classical mathematician; it is the philosophy of essence or form

dominating existence. The formalist emphasizes the permanent aspects of things and discounts the importance of "becoming" or change.

Vitalism substitutes for the model and the diagram the notion of the individual specimen, usually a living organism. Here is the point of view of the physician and the naturalist. Aristotle is the outstanding example. Here explanation often takes on a developmental or genetic aspect. The notions of teleology and development of the individual become heavily emphasized, although the formal diagram of the Platonist may still be considered as relevant to the growth of the specimen.

Philosophy of Creation. Here we have the point of view of the creative artist, with special reference to the work of art as it exists in the making, in the process of its own realization or creation. We think at once of the philosophies of Bergson and Whitehead. Here change or process reveals a tendency toward an unpredictable novelty not only in matters of detail but also in the realization of value and the evocation of form. The artist is concerned with the uniqueness of things rather than with systems of classification or causal backgrounds.

These four types of speculative philosophy correspond very roughly to the four world hypotheses studied by Professor Stephen Pepper under the names of mechanism, formism, organicism, and contextualism. In describing the fourth mode of thought, the present authors acknowledge some influence of existentialist writers. But in general, we are following Dr. Pepper's lead, and we accept his analysis of the speculative philosopher's activity. We are, however, not inclined to follow Dr. Pepper's suggestion that choice of ultimate philosophical systems is somehow a matter of taste. We would hesitate to argue that there are a priori considerations which render a final choice of a speculative system a logical impossibility. Certainly, to ask which of the forms of thought is the most adequate philosophically is not a misleading or a meaningless question, even though we may admit that our philosophy has not as yet reached any final

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conclusion. After all, some synthesis of the four approaches is not unthinkable. In the meantime, it is enlightening to recognize the several modes of thought and of explanation that appear in the intellectual life of Western Europe and the Americas. And it is always helpful to remember what type of thought one is considering when examining any passage of scientific or philosophical reasoning, especially when this reasoning is of a controversial nature.

Further, the authors acknowledge their debt to Professor Richard P. McKeon, from whose studies in philosophical methodology and semantics they have often profited. Again, the late Alfred North Whitehead's account of the methods of speculative thought as presented in the first pages of *Process and Reality* and his treatment of the relation of philosophy to other disciplines and activities as presented in *Science and the Modern World* and elsewhere have exercised a profound influence upon their thinking. The authors have collaborated throughout the entire essay and there is no section that does not contain the fruits of their combined efforts. Nevertheless, it is possible to say that Professor Brumbaugh has taken the initiative in preparing Chapters 2, 3, and 4, while Professor Stallknecht has devoted the major part of his attention to Chapters 1, 5, and 6.

The authors are indebted to several learned journals for permission to reprint certain passages appearing in Chapters 5, 6, and 7. These passages have been drawn from Professor Stallknecht's contributions to the *Journal of Philosophy*, the *Philosophical Review*, and the *Review of Metaphysics*.

N P. S.
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THE COMPASS
OF PHILOSOPHY

»» CHAPTER 1 ««

The Philosophical Enterprise

PHILOSOPHY AND THE LOVE OF WISDOM

The words "philosophy" and "philosopher" have various meanings, which they have acquired throughout some twenty-five centuries of continual usage in the intellectual life of Europe and America. During this time, these words have been employed in a number of contexts: learned, popular, "honorific," and derogatory. Sometimes the word "philosopher" has referred simply to any very thoughtful person, a wise man or a "sage," sometimes only to a highly trained scholar or a scientist, sometimes to any human being who meets misfortune with dignity or indifference; and sometimes, when used ironically, "philosophy" has connoted a sort of "stargazing" involving a lack of concern for practical or "mundane" detail. Less frequently, however, as in Plato's *Republic* (375 B.C.), which contains one of the first discussions of the subject, these words have included some reference to administrative ability of a high order, although Plato himself recognized that most philosophers, indeed the truest ones, would be temperamentally reluctant to undertake administrative duties. At any rate, Plato insisted that the highest type of statesmanship or policy-making may be considered as philosophy in action.

Again, for many years the word "philosophy" referred, as a general term, to any of the several pursuits that characterize the work of the learned or the scientific world, thus standing indifferently for any of the "arts and sciences" of a university curriculum. Accordingly, in German universities the term "philosophical faculty" has

long been used to distinguish the professors of the "arts and sciences" from those in the professional or vocational schools of law, medicine, and theology. Indeed, any scholar or scientist whose interest in his field surpasses that of the well-informed dilettante, called by Plato the mere lover of opinion or "philodoxer," once was thought to deserve the name of philosopher. "Philosophy" is still used in this sense on university diplomas granting to the mature student who is considered ready to give advanced instruction the appropriate degree, "Doctor of Philosophy." This is now a matter of conventional and picturesque phraseology, but we must remember that in Galileo's and in Isaac Newton's time—that is, at the dawn of modern science in the seventeenth century—and even for some years thereafter, all the natural sciences were grouped under the name of "natural philosophy," as distinguished from "mental" or "moral" philosophy, which included ethics, psychology, and even much that would today be described as social science. A physicist was, at that time, described simply as a philosopher, perhaps to indicate that he aimed at developing a systematic and comprehensive theory of matter and motion rather than at gathering a body of comparatively unrelated observations and rules of thumb, however valuable these rules might be to the engineer or the shipbuilder. (It is interesting to notice that in the eighteenth-century instruments such as the pendulum and the balance, of use in a physical laboratory, were often described as "philosophical apparatus") We may hope that the word "philosophy" carries something of this broader meaning in the title of the above-mentioned academic degree. Thus we feel that a "Doctor of Philosophy" should possess a "philosophical" or comprehensive command of his field along with some sense of its relation to other subject matters and disciplines. This requirement holds whether the candidate be a student of literature or of zoology.

In other contexts, "philosophy" interpreted in an even more ambitious way has stood for the "wisdom," or the mature and well-informed synthesis of interpretation and evaluation that should, ideally speaking, be founded upon a comprehensive mastery of all

the subjects included in a liberal arts-and-science curriculum. In this sense, the philosopher pretends to be, as Thomas Carlyle said, half in jest, a "professor of things in general." Such a scholar must combine an encyclopedic command of the arts and sciences with an over-all interpretation of their background and interrelations. But only very occasionally do such figures appear, and then the ambitious nature of their undertakings often renders them suspect by their contemporaries. Hence in recent years, philosophers have inclined toward greater modesty in describing their objectives. The ideal of universal knowledge may today seem presumptuous, even faintly ridiculous or quixotic, although in one way or another it still influences our notion of philosophy, as when we consider philosophical orientation as a goal of liberal education. After all, such modesty and caution have not been limited to the modern period. They were, indeed, implicit in the attitude of Socrates himself, who more than any other figure personifies the spirit of Western thought. Plato records Socrates as saying: "I shall not call these students wise, for that is a glorious name that belongs rightly only to the divine. But there is a modest and appropriate title for them, namely, *lovers of wisdom* or *philosophers*." However else we may describe it, philosophy is an endless pursuit of wisdom, and it presupposes wonder or the love of wisdom—what we today call "intellectual curiosity"—as its deepest motive. The philosopher pursues wisdom, willingly recognizing that he does not possess it.

The field of philosophy, the terrain upon which we may seek this wisdom, is a wide one, and it is certainly the case that contemporary philosophers are interested in many different things—things which may at first glance seem hardly relevant to one another. Thus we find philosophers discussing such diverse topics as, to mention only a few, the meaning of "right" and "wrong" in human conduct, the relation of the individual to society, the methods and presuppositions of natural science, the relation of thought to language, the principles of literary criticism, and the validity of certain traditional "arguments" purporting to demonstrate the existence of

God. Perhaps one might defend the proposition that only those people who see the mutual relevance of such topics as these deserve to be classed as mature philosophers, and this remark would, after all, contain about as much truth as such utterances usually do.

On the other hand, the more popular concept of philosophy should not be neglected. Popularly speaking, the philosophical ideal is today, as in the past, that of the wise man capable of a rounded interpretation of fundamental issues and of events pertinent to them. Thus the philosopher, while personally disinterested, is thought to take a comprehensive view of things and to look for the enduring principles standing behind the many contingencies of human life. So conceived, philosophy appears in a traditional role as the "guide of life," *Philosophia biou kubernetes* (as in the motto of Phi Beta Kappa society), which seeks to define ultimate values and tries clearly to distinguish between ends and means, indicating how human life may properly seek its fulfillment. Such a thinker or teacher must help his students to distinguish between those things which are good in themselves and, in contrast, those practices and institutions which are worth while only insofar as they may further the achievement of recognized ends. Hence the philosopher may often appear as a critic of social policy. He is called upon to consider programs and institutions in the light of their ultimate objectives, which are often lost sight of in a discussion of current affairs, grown too "practical" to be helpful in the long run.

The philosopher then appears as the "elder statesman," whose experience has ripened through reflection into a matured and farsighted interpretation of life and its critical alternatives—what we might call a general "theory of practice." In this sense, we may speak of a philosophical teacher, public administrator, jurist, or historian. Such men as Thomas Jefferson, Abraham Lincoln, and Edmund Burke among statesmen, Oliver Wendell Holmes the Younger in the law, Edward Gibbon the historian, Dante and Goethe among poets—to say nothing of men like Socrates and Plato among those more usually classed as philosophers—come to mind at once. These men, each to the best of

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his ability and from his own point of view, saw the interconnections of things and ideals and never lost sight of the total lay of the land as he appraised its detail. Now the popular definition of philosophy requires of the "professional" philosopher or professor of philosophy, even in his more technical writings and teaching, something of the breadth and the universality that we all admire in the thinking of these famous men. Nor is this popular notion to be summarily dismissed. Philosophy must in some way and in some measure fulfill the popular demand made upon it or else fail utterly. After all, the public neglect of academic philosophy in recent years is owing partially to the fact that many professional philosophers have tended to avoid the central issues which their public would gladly have considered if the problems had only been put in a form readily intelligible to them.

To put it briefly, the philosopher seeks an intelligible orientation in his world. Man stands, so to speak, in the middle of things and must find ways of peering beyond his horizons, if only to make clear his own limitations. He seeks to supplement his everyday experience of things and events and his own consciousness of himself by enclosing them within a scheme of interpretation and evaluation. Such a scheme is, when exhibited in all its implications, a "system" of philosophy. In certain periods, the Christian world drama or cosmic forecast has supplied a quasi-historical frame of reference against which such orientation was possible. The plot of this world drama extended from the creation of the world through the story of the temptation and the fall of man, his punishment, and the offer of salvation, to an ultimate consummation in the destruction of the natural world and the rewards and punishments of the last judgment. In those days, philosophy was sometimes described as "the handmaiden of theology." In more recent years, philosophers have tried to free themselves from the authority of any such established mode of interpretation. But they still owe much to the great teachers of religion—as much certainly as to the great pioneers of natural science. The philosopher's desire to give some significant content to the broad topics

intended by such expressions as "our world," "human life," "the human situation," "human destiny," and "human dignity" is in some sense a religious one. Such a desire indicates that, so to speak, we take life seriously; and this concern is at heart a form of piety. Considered in this light, philosophical thinking seems to be an end in itself—just as religion, the arts, and pure science are ends in themselves, enjoying a value distinct from their practical utility. This attitude may be summarized by Socrates' remark that the unexamined (or uninterpreted) life is not worth the living and that the person who accepts his situation without any desire to see things as a whole is something less than human in his interests. At certain periods, and in certain societies, such an attitude has been widespread. Today an emphasis upon specialized research often takes its place.

Orientation in philosophy calls for *integration* of the several aspects of our human experience. The philosopher seeks to see things together steadily, and as a whole, not as a heap. Here again, whatever our attitude toward religion, we are influenced by a religious or theological analogy. God's wisdom, his "view" of the world, remains as an ideal of truth. His *synoptic* apprehension of things is to be contrasted with our *synthetic* apprehension. Thus we begin with a vast multiplicity of detail and work very slowly toward unified awareness of things as a whole. We begin with the "many" and work toward the "one." God, we may suppose, sees the one or the whole from the very beginning in and through its many parts and passages.

The philosopher may be compared to a child awakening in a wholly unfamiliar environment, a vast cave or a jungle. He gropes in the dark with only a feeble torch or flashlight to illuminate scant patches of his surroundings. Like such a child, we are overwhelmed by details the patterns of interrelation of which escape us. We cannot see the wood for the trees, nor on the other hand do we see any single tree complete as an independent unit. Our many disparate glimpses of our environment must be pieced together, since we do not grasp in a single glimpse anything that may be called a "whole." Indeed the very idea of "wholeness" must be supplied as a tentative

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principle of interpretation. The very use of such a notion as "wholeness" indicates that a certain effort toward orientation has already taken place. Thus our problem is a complex one. Not only must we describe our environment but also we must teach ourselves how to do so. We must learn to use such helpful ideas as "whole" and "part," "cause" and "effect," just as we must learn how to count and calculate.

Let us illustrate further by using another figure of speech. Suppose a child faced with a picture puzzle the pieces of which have been shaken into a random confusion, some right side up, some upside down. Suppose again that the youngster has never seen a completed puzzle. Still, he may have a vague feeling that the bits somehow belong together. Or perhaps this idea is supplied by his parents. He may then after some first random trials begin to assemble and fit together its pieces. This task will be greatly advanced as the child gains some first comprehension of the meaning of the still incomplete picture. Comprehension of this meaning may be compared to the wisdom of the philosopher who surveys the broken pieces of his world. This analogy is a crude one, since it makes no allowance for the fact that in the real world the child has his own place in the puzzle. He is not outside looking in. Nor is the philosopher, who is part of his world and part of the puzzle.

PHILOSOPHY AND THE HUMAN SITUATION

The study of speculative philosophy calls for a formulation of the broad patterns or outlines through which the world, including ourselves as observers of the world and agents within it, stands forth as an object of our contemplation. There is a clumsy and rather formidable word which when strictly interpreted means the "study of appearances." This word, "phenomenology," appears in the title of one of the masterpieces of philosophical literature, Hegel's *Phenomenology of the Spirit*, published in 1806. In this sense, philosophy might be described as the *phenomenology* of the human situation. Philosophy is a study of the ways in which the human situation as a

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whole—the world and our place in it—becomes apparent to us. These appearances are not direct or immediate intuitions. They are not “brute data.” They are modes of interpretation. We describe the world and our place in it by comparing it with the more familiar objects with which we are acquainted. Thus we may compare the world to a machine, containing a number of lesser machines, and God to an engineer or, say, a master watchmaker, ourselves perhaps to minor mechanics. Or we may think of God as a creative dramatist, author of “the play,” and ourselves as actors in the play, improvising at times as in the free style of old Italian comedy.

These comparisons are, of course, crude and would have to be refined considerably before we could employ them as first principles or even as analogies upon which to base a philosophy. Both of these comparisons, however, do actually figure in the history of European philosophy; the first is characteristic of a group of thinkers known as Deists, who flourished in England and France during the late seventeenth and eighteenth centuries. The second is employed occasionally by the ancient Stoics, who taught that man should be content to play the part that God has assigned him. It is important to notice that the two analogies were first employed by people of very different backgrounds. The analogy of the machine originally appealed to students interested in physics, astronomy, and technology; the analogy of the world drama appealed to thinkers who were well acquainted with the great Greek tragedies, in which the attitude toward life is a profoundly moral one. To the latter thinkers, “All the world’s a stage” seemed a reasonable and natural comment. To the former, the regularity and precision increasingly apparent in natural process clearly suggested the mechanical discipline of a Godlike watchmaker.

Hence we find philosophers describing the human situation by means of comparisons and analogies. In this they resemble the poets and the humorists. Of course, there is a difference. The philosophers are far more concerned with the consistency of their interpretations, since they ask us to consider them rather more literally and precisely

than the poets, who are concerned with the aesthetic intensity and power of expressed emotion. From a *logical* point of view, the philosopher is far more self-critical and cautious than the poet. The philosopher, in this like the scientist, is trying to describe the world. The poet is content to tell us in metaphorical language what it feels like to look at the world in a certain way or from a certain point of view. Hence the philosopher can never wholly ignore other points of view, whereas the poet can and very often does. Indeed, one poet may in several works present several very different imaginative interpretations of the world and our place in it, each time ignoring his other attitudes. This is especially true of a dramatic poet like Shakespeare who can speak to us through his characters. From him we hear of a "destiny that shapes our ends"; again we are told that we stand to the gods as "flies to wanton boys," who "kill us for their sport"; and finally that we are "such stuff as dreams are made of." Philosophers are, on the whole, less likely to avail themselves of such a privilege. They are more concerned with developing such insights or guesses into coherent and systematic descriptions, or "theories" of value and existence.

The philosopher then, rather more cautiously than the poet, undertakes to clarify our view of the world and our place in the world thus viewed. He does this by the use of carefully chosen and qualified comparisons or analogies. This clarification is partly a guide to action and a criticism of evaluation and partly a matter of satisfying a deep-seated curiosity. The ultimate objective seems to be the same for all philosophers. Their aim is orientation through description of the total environment. But the meaning of description, or of *satisfactory* description, varies from one type of philosophy to another. Indeed, these several contrasted patterns of thought may in time come to interest the student of philosophy as deeply as anything that he has to examine, and distinguishing between them is in itself a philosophical problem of some delicacy.

It is important to notice that each of the several types of description is influenced by the attitude, the interests, and the presupposi-

tions of people whose attention has been devoted to a special field of activity or inquiry in itself distinct from philosophy. This preliminary orientation exercises an important influence upon the philosophical thinking that succeeds it. Thus when he first turns his attention to philosophical questions, an engineer or a technician is not likely to take the same point of view as an artist or a physician, or to employ the same methods and principles of description or evaluation. After all, each of us is inclined to think of things as resembling in some degree objects with which he is especially familiar in his usual occupations. Thus our thinking makes its way subject to the guidance of comparisons or analogies familiar to us because of the cast of thought that we bring to philosophy. This fact presents a persistent difficulty. The world that appears to the natural scientist, to the man of affairs, or to the poet is, after all, one and the same world, however varied its aspect. We must always remember this while studying the several perspectives open to philosophy. It is important that the study of philosophy further understanding and communication between people of different points of view. Philosophical thinking fails in its purpose when it constitutes a barrier between thinkers each of whom is committed from the start to defend his own view. Thus the philosophical critic must be acquainted with the intentions more or less consciously or explicitly entertained by members of each traditional way of thought. We might almost argue that the importance of speculative philosophy lies in the fact that its several lines of argument reveal the modes of thought or generalization upon which the intellectual enterprise must depend. Again, we might suggest that the great controversies in the history of philosophy exemplify the major or fundamental patterns of misunderstanding to which our civilization is subject. Thus, however some skeptics may argue, even "meaningless" or "hopeless" disputes have an all-too-genuine significance of their own and call for a meticulous study that is amply justified.

The philosophical critic must call our attention to the alternative methodologies or ways of knowing and discussing that character-

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ize the several types of investigation open to us. It is in terms of these contrasting ways of thinking that one can understand and in some measure resolve the intellectual conflicts which have often stood in the way of a consensus or meeting of the minds in many matters of theory and practice. Strange as it may seem, at least at first glance, thinking always involves assumptions of some sort. As the study of philosophy has developed, it has become one of the philosopher's primary functions to isolate and exhibit these assumptions or presuppositions upon which so much of our intellectual life depends. These assumptions not only color our reasoning but become well established as the context of the less systematic and formal beliefs that constitute our "common sense." They are involved in our normal consciousness of ourselves, of our fellows, and of the world in which we live. The "speculative philosopher" who frames a theory of time and eternity, of reality and appearance, is subject to such assumptions, as are also the scientist and the "man on the street," although the last-named is not very likely to isolate and challenge the assumptions to which he is nonetheless committed.

FOUR WAYS OF THOUGHT

These assumptions supply the regulative themes or notions that preside over and guide the development of philosophical thinking. For the purposes of an introductory study we may note four general types of these presiding ideas or assumptions concerning our world and the things that it contains. These four types of thought may be said to have had their beginnings in thinking occasioned by the special interests and concerns that have appealed to philosophers. Thus these assumptions have in a sense a "subphilosophical" origin. Each type of thought takes the point of view of a specialist and produces a philosophy that surveys the world from that point of view.

As we shall see, this involves a considerable amount of speculation and assumption that in the very nature of the case must overreach the evidence. But it is only by taking chances that our thinking can advance. The four points of view may be listed as follows:

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The *mechanist*, that of the technician or the engineer

The *formalist*, that of the mathematician

The *vitalist*, that of the "naturalist," say the biologist or the physician

The *creationist*, that of the artist, the critic, or the art lover

These types of thought need not be considered in any fixed order. Certainly we need not consider one as derived from another. Perhaps it is most convenient to consider the mechanist attitude first, since in recent years it has appealed most strongly to the popular imagination. Thus at the present time this way of philosophy is the easiest to make clear; but this fact does not give mechanism any absolute priority. The machine, the living organism, the mathematical or formal system, and the work of art are equally inescapable as objects of our attention. None takes precedence over the rest, and in the long run we can hardly appreciate the significance of any one of them without some reference to the others, since their contrasting characters help us to understand them.

Let us consider each point of view in turn.

The technician thinks in terms of a machinelike structure whose parts may be distinguished from one another, and whose operation can best be described by outlining the interaction of these parts. Each part can be treated as a unit and the whole can be considered as an assemblage of such "least parts," which it is most convenient to consider as indivisible and independent of one another. From this point of view, in order to understand an object and its operations, we had best construct a model of it, at least in imagination. As this point of view influences philosophical thought a theory develops which is known as mechanism. One of the characteristic assumptions of mechanism is that our world is actually composed of a large number of "least parts." This way of thinking has enjoyed a considerable vogue in modern times and seems "reasonable" to the modern mind, whose tendency toward mechanism and materialism is well marked.

Nonetheless, it is possible to ignore the notion of distinct parts or

elements operating together in composites. Thus for example it is not necessary to think of a line as composed of segments or of points. We may think of it as *divisible* but not necessarily *actually* divided. After all, the "atoms" or indivisible "least parts" of philosophical theory are not open to observation. They are perhaps only assumptions of our own making. The mathematician is likely to prefer a mode of description centering about a diagram in which the important features of his subject matter are schematized but not broken down into distinct and separable elements.

The naturalist, on the other hand, although often thinking in terms of models and diagrams, cannot avoid recognizing in the organism or living specimen an important source of insight. The organic specimen is distinct from the mechanical model, the activity of which seems limited by comparison to a narrow routine, and it possesses a self-control and a power of initiative that no diagram can represent adequately.

The artist and the art lover often find it necessary to emphasize the unique individuality of things even more heavily than the vitalist, and to recognize in the production of such individuality, or beauty, a creative energy unnoticed by the other thinkers. Here we come upon the notion of creative production or expression that is neither an arrangement of ready-made parts nor the construction of a diagram or a pattern, but something very different; namely, the realization or the embodiment of an idea in a medium or a language.

Let us consider in somewhat more detail the philosophy of mechanism. To the mechanist the world appears as a machine or a system of distinct parts that operate upon and control one another. Such mutual interaction of parts often sets up a predictable regularity, frequently periodic in nature. Such interaction constitutes order as opposed to sheer randomness or chaos. The mechanist is always impressed by those aspects of nature which remind us most directly of a mechanical routine like the regular periodic motions of the heavenly bodies in our solar system. An ideal "description" of these

is to be found in a planetarium, where the orbits and relative velocities of the planets and their satellites, modeled to scale, are actually presented to us in miniature operation. When it is impossible to construct a model of this sort, we must approximate this ideal as clearly as we can. We must "break down" the detail of our subject matter into simple units that require for our purposes no further subdivision and then, if only in imagination, reconstruct the whole with its operational principles. From childhood many of us have liked to take things apart or dissect them and to ask ourselves how these parts work or interact with one another. We shall see later on that such procedure need not be confined to the physical sciences. A similar movement is quite possible in psychology or sociology. Nevertheless there is something uncertain about these "least parts." Science is always moving beyond them toward even more elementary or primary units. The atom is continually being redefined or if the *name* is fixed at a certain level, then new names have to be coined, such as "electron" and the like to describe the newly discovered units or elements. Thus we may well grow more and more hesitant to grant any finality to this or that basic unit of explanation. We may also notice that at least some of these elements can hardly be thought of as existing independently or in isolation from other entities. They are not ultimately basic or independent, but depend on their total environment for support. So the living cell was once thought to be basic or elementary in biology, but it requires a complicated set of environmental conditions to secure its existence. It is only relatively speaking a unit, and it is not independent.

With these considerations in view we may be tempted to examine other modes of interpretation in which the "least part" of the mechanist does not enjoy a central position. At this point we may turn readily toward either formalism or vitalism. In each of these schemes of thought the relation of part to whole is to be contrasted with the mechanist view. Thus the vitalist emphasizes the unity of the living organism whose "parts" or organs depend for their existence upon the life of their unity as a whole, while the formalist

prefers to emphasize an idea like that of pattern or form without insisting upon the presence of ultimate or irreducible parts. We may feel that the shape of things is more significant for understanding them than the parts or the material out of which they are made. After all, the distinction between form or shape on the one hand, and matter or material on the other, is a relative one. We may say a house is made of bricks and then have to describe the bricks themselves in terms of their form or shape and material or stuff. It is hard to think of a matter so elementary that it lacks form, and it is doubtful that we could recognize such matter if confronted with it.

In general, the formalist recognizes mathematics as the queen of the sciences and he sympathizes with the ancient followers of Pythagoras, who insisted that "all things are number." This we may paraphrase to read: The mathematical patterns and relations of things give us the most penetrating insight into their nature. But we must remember that Pythagoras meant more than this. For him things *are* their mathematical or quantitative properties. Strip them of these and you have nothing left.

Consider in this connection how many aspects of things and events can be presented by plotting curves between co-ordinates on a graph. This does not mean, of course, that such things are spatial or geometrical in nature but at most that they can be adequately schematized in this way. Perhaps we should say that all things which the formalist finds important may be reported by means of a diagram—or could be if our ingenuity and powers of attention were only great enough. Perhaps we should point out that a formula or an equation, say chemical or mathematical, is a diagram of a sort. For instance, let us remember that ¹

¹ This aspect of the algebraic formula stands out more clearly, perhaps, if we recognize that our letters, such as *a*, *b*, or *x* *y*, which are "variables," can just as well be written as blanks to be filled in with specific numbers. With the rule that blanks of the same design must be filled by the same number, we can thus write the formula

$$(\text{---} + \text{..})^2 = \text{---}^2 + 2 \text{---} \times \text{..} + \text{..}^2$$

And we can "prove" this equivalence by showing it to follow from basic permitted rearrangements of elementary blank patterns.

$$(a + b)^2 = a^2 + 2ab + b^2$$

is an abbreviation of

$$\begin{array}{r} a + b \\ a + b \\ \hline a^2 + ab \\ \quad ab + b^2 \\ \hline a^2 + 2ab + b^2 \end{array}$$

In the meantime, as we consider the point of view of formalism, we may feel that, as the name implies, something is omitted. This something is not so much the fixed-unit parts of the mechanist, although there will be people who feel that these are indispensable. Both the formalist and the mechanist overlook, we may believe, something more immediately palpable than atomic units. This something may be crudely described as autonomy or self-control and initiative. The living individual appears as a genuine center of activity. The living organism follows a pattern of growth established in nature. But it by no means follows a predetermined path. It is continually adjusting its behavior to changes in the world about it. In general, the free play of adjustment open to the living specimen is far wider than that open to a machine, the operations of which are limited to comparatively rigid patterns of action. Again, we may say that the organism fosters the growth of its own parts, which come to maturity within the living economy of the organism itself. They are in no sense prefabricated. In living things parts or organs develop within the growing whole; the whole is not a system of assembled parts. In this sense every blade of grass is a self-contained individual with a unique history of its own, although as a specimen it is a member of a species and bears a family resemblance to its fellow members. This individuality can hardly be adequately recognized by the mechanist or the formalist. No mechanical model, it would seem, can represent what we mean by "autonomy." Again we may argue that individuality is always lost sight of when we construct

a diagram. In this connection we might point out that there is usually a great difference between a diagram and a portrait.

Now there are several points of view from which we may emphasize the presence of individual things or even of individual persons in our world scheme. The artist is nearly always concerned with the individual quality or character of a particular object that is presented to us, so to speak, for its own sake. So also the historian often turns his attention toward individual characters, such as Alexander, Caesar, or Napoleon, whose lives do more than typify groups or classes of human beings. Again, the good physician must be concerned to a very considerable degree with the unique history, and also with the personality, of his patient; and even the biologist must be ready to recognize, although perhaps in a lesser degree, the particular idiosyncrasies of the specimen he is examining. If we compare any given living specimen with the idealized diagram typical of its species we will find a genuine contrast between type and specimen. After all, it is possible to recognize *individuals*, and the human face is not the only index of individuality that makes possible significant use of a proper name. We recognize the individuality of horses, dogs, cats, and other animals, and we have to admit that if we were more intimately or thoroughly acquainted with other living things, their individuality would be equally obvious.

Of course one might object at this point, arguing that it is very easy to overemphasize the significance of the individual. Such emphasis, one might say, is the result of a sentimentalism that seeks to enhance our own importance. Perhaps our morale depends upon some such attitude, which is justifiable enough unless it leads us into mistaking our interest in the individual for an insight into his nature. After all, an "individuality" that seems to us unique, and therefore to be enjoying a special status in the order of things, may seem commonplace enough to an intelligence more amply equipped than ours and supported by wider experience and observation. In other words, we may frequently mistake complexity of detail for individuality. There would seem to be something "unique" and

"individual" about an old automobile or motorboat that bears upon it the marks of its past, a history of minor mishaps and wear and tear resulting from the particular usage it has received. However, we would hardly feel justified in basing a philosophy upon uniqueness of this sort. We could hardly argue that the "used car" has acquired a new mode of existence that requires special recognition from the philosopher. Are we justified, then, in insisting that the living specimen or the human personality deserves such treatment? Our philosophical orientation must largely depend upon the answer we give to such a question.

The mechanist and the formalist do not emphasize the notion of individuality. In this they are opposed by the other schools of thought. The naturalist insists upon the reality of the individual, and he thinks of the world as built not of atoms but of individual substances. He is tempted to think of these substances as comparable to living things rather than to machines and he finds in them much that cannot be exhausted by mathematical or quantitative description. He accepts individuality as a feature of his world. He does not, however, witness the emergence or coming-to-be of the individuality that he takes for granted. In this he differs from the artist, who not only respects individuality but tries to produce it. What we call "creation," as distinct from construction or production, is the evocation of the individual and the unique. Thus philosophers often resort to analogies of still another type that center about the notion of creative activity as we find it in the arts. All of us at times are creators, if only unintentionally in our conversation or in letters to friends, but our creation is never as sustained or as intensive as that of the true artist, whose finished product possesses a manifest individuality far surpassing that of the machine or the specimen. Such individuality, apprehended in its unique quality and for its own sake, is the artist's objective.

This emphasis upon the unique distinguishes the work of art from the formal pattern. To be sure, the work of art is rich in formal structure. Consider merely the metrical pattern and the rhyme

scheme of a poem. But in the end, the poem as a unique lyrical utterance means more than its structure. The structure may be repeated in other contexts, even perhaps in other languages, but a good poem cannot be paraphrased or translated with any marked success. The birth or the emergence of such individuality in the work of the artist has fastinated many philosophers. For some it has appeared as an archetype of genuine freedom. Thus as we consider the growth of, say, a painting or of a poem subject to the presiding activity of the artist or poet, we catch, so to speak, a glimpse of freedom in action—that is, of course, granted that the artist is a genuine and responsible one who follows his own insights and feelings rather than imitating or repeating standard patterns approved in advance by “recognized authority.”

As we study these four modes of thought we will gradually recognize their importance and the influence that they exercise upon common sense, science, and philosophy in general. We can also notice their special relevance to our thinking concerning standards of value and ideals of conduct. A few words concerning the latter may not be out of place here. Consider the influence of formalist thinking upon evaluation and practical decision. For the formalist, the order, the coherence, or the consistency of structure is of value in itself. Cosmos or universe is worth more than chaos or randomness. “A place for everything with everything in its place”—or perhaps we should say sheer intelligibility—is valuable. The well-ordered life composed of actions consistently conceived is a formalist ideal. This has a special significance with reference to our personal relations, and what we call “fairness” or “reasonable” treatment of our fellows is a matter of consistency, because it is inconsistent to make arbitrary reservations in our own interest.

Turning to the mechanist’s approach, we see that the notion of “mechanical perfection” or efficiency suggests ideals both of utility and of intrinsic excellence. Efficiency is always useful, and also an admirable end in itself. A fine watch may, for instance, be admired on both counts. It is a valuable or helpful instrument and its pre-

cision of operation, when protected from outside disturbance, embodies an ideal.

The mechanist thinks a good deal about utility, and finds that he needs an ultimate standard of usefulness. He may try to build an ethics or guiding theory of conduct and policy on the notion of the greatest happiness (that is, pleasure, satisfaction, and sense of well-being) of the greatest number of people. He may try in this context to apply his notion of "least parts." He may think of happiness as composed of units of feeling considered as positive or negative in quality, such as distinct moments of pleasure or discomfort, and he may try to calculate the value of a given policy in terms of such units. Such a view, an outgrowth of mechanism, is often called "utilitarianism."

The naturalist thinks along rather different lines. His imagination is attracted by the living organism, which, rather more than the machine, is in constant intercourse with its environment and continually adapting and readapting its functions and behavior to outside conditions. The living being thus displays an autonomy or self-centered control broader than that of the machine. Within limits, it can redirect its operations and even repair itself. Such autonomy may appear as an ideal of which health and survival are important aspects. In a sense life itself is an ideal, of which maladjustment, disease, and death are the opposites. Happiness may be then considered not in terms of unit pleasures, but as the presence of successful adjustment. In this context happiness may be thought to involve an avoidance of extremes; adjustment in many cases is a matter of moderation.

Turning to the fourth point of view, we may note that the intrinsic value of beauty as opposed to monotony or ugliness, especially of man-made objects, is apparent to all of us even when we disagree as to which particular objects are most beautiful. As has been noted above, a beautiful object manifests its individuality more fully than an ugly, dull, or commonplace one. This may influence our thinking about value in general and about moral values in particular. Thus

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the artist may accept the notion of happiness as adjustment but modify it to emphasize the self-expression of the individual. In other words, the problems of adjustment cannot be solved for one in advance. The freedom of the individual to express himself as an individual in his own way, and to develop himself through his own activity, is the finally important thing in human life. Without this final achievement of freedom, he may feel that all human progress is no more than a complicated system of means without an end. This end is recognized somewhat as the beauty of a picture is recognized in a moment of intuitive feeling. Freedom in this sense may be known, so to speak, by its taste—as may also its absence. Such emphasis upon unique individuality need not be limited to the human realm. It can blend with a religious sentiment directed toward “all things both great and small.” The uniqueness of a thing, its individuality, or, so to speak, its “thisness,” is the character for the sake of which God has created it.

PHILOSOPHY, SKEPTICISM, MYSTICISM

The following chapters will survey in some detail the modes of thought sketchily set forth above and contrast with one another the philosophies that result from their use. This will, roughly speaking, amount to “boxing the compass” of philosophy. In reviewing the above considerations, we must be clear that these types of speculative thought are essentially comparative or analogical. The notions that dominate them can easily be overemphasized if they are taken literally. Thus the physical mechanist must be well aware that his world is not to be *identified* with a machine. For instance, it would be simply silly to ask how the world machine is lubricated. Or if we use the notion of the living organism as a guide, we will not insist that all things in our world breathe or eat. We may, however, find it helpful to compare the regular periodic motions of the solar system to the workings of a complicated clock, thus emphasizing the predictable routine of nature; or to compare a human society, a modern nation or state, to a living organism, thus emphasizing

the mutual dependence of citizens and groups of citizens upon one another. We may go even further and compare the human body to a system of machines whose parts are delicately adjusted to one another, and so delicately adjusted, we might add, that the machine cannot be "taken down" without serious damage. In the past, great scientists and philosophers have said just this and thereby gained an influential hearing.

As we study the history of philosophy we soon learn that philosophers find it helpful and interesting to push their ideas just as far as they will go. Thus we find them exploring the implications of what are sometimes called "world hypotheses." This results in the formation of schools of thought each based on what we might call an intuitive preference for a fundamental thought pattern and for a single type of explanation derived from it. In this way the four major types of speculative thought examined above have resulted. Each type involves or leads to an interpretation of the world as a whole.

To be sure, these modes of thought can be combined. Thus we might prefer one mode of interpretations in describing one part of the world and another mode while working elsewhere. Mechanism or formalism may be employed in scientific methods applicable to physical nature, while organism and creation serve as guides in describing life and mind. But the history of both philosophy and science contains instances when mechanism has been applied to description of mentality and formalism to a study of matter. Each system of explanation finds suitable material to work with outside the field in which it originated, and thus tempts the philosopher to apply it universally.

Many of the great philosophers have undertaken to do this. They have attempted to describe the human situation in its full setting and so have found themselves talking about the world or the universe. Returning to the figure mentioned above of the child in the dark cave or the jungle, we may note that the philosopher cannot restrain himself from speculating upon the total layout of the vast

area in which he stumbles about. This attitude is essentially human and understandable, but there are others almost equally prominent in the history of thought. One of these might be described as that of practical skepticism. The practically minded skeptic does not concern himself with a "theory" of the cave, its origin, location, and topography. Rather he hopes to develop a technique of groping about in the dark with a minimum of danger and inconvenience. What he wants is a number of maxims or rules of thumb, tested by experience. Turning again to another example that we have already considered, one could put together the jigsaw pieces of a picture puzzle without considering the meaning or the content of the picture itself. In this example, which is hardly more than a figure of speech, we may interpret our incomplete and hypothetical knowledge of the content of the picture as philosophical. If we find this content too unfamiliar and confusing, we can decide to ignore it. We might then emphasize the shape of the units, perhaps supplementing this only by noting their color. Such a procedure would represent an approach something less than philosophical in spirit. It might be described as strictly "positive" in method. A person adopting such an approach may be called a positivist.

The positivist is not concerned with philosophical orientation except insofar as he considers his skeptical suspension of curiosity a substitute for wisdom and, in fact, worth more than the wisdom of the philosophers. He is quick to point out that the philosophers—or "metaphysicians," as he calls them—are likely to disagree among themselves. For the positivist, knowledge is not philosophical in nature. It does not, at least insofar as we can tell, approach even remotely an ideal or a synoptic vision like that of a deity. True knowledge, for the positivist, is a construct, almost a mechanical construct, not of real units or least parts but of observed data. Knowledge is an arrangement and an interrelation of recorded data, items of sensation, "glimpses" or readings that, we gradually discover, tend to occur and reoccur in recognizable patterns or sequences. These patterns and sequences or series of data make possible

the prediction of future data, and upon this is based the scientist's power to predict and in some measure to control "nature." For the positivist, "knowledge" or "understanding" of natural process means no more than this power to predict and hence sometimes to control. In the field of natural science, this definition often seems satisfactory. We are satisfied if we know just what to expect from an electric current even if we do not know "what" electricity is.

In recent years, the positivists have offered the students of natural science stimulating criticism that has contributed to the rigorous clarity of scientific thought and has purified the language of science. Positivism has unburdened science of a number of untenable concepts, dead branches that called for pruning—such as, for example, the notion of "empty" space, which no one has ever been able to observe. For the positivist, observation through the senses supplies a fundamental discipline that both science and philosophy must respect. We must not allow ourselves to talk about anything that we cannot "check" or verify by reference to patterns of sensuous experience. This puts austere limitations upon our thinking and reduces philosophy to a comment upon the methods of science and the beliefs of common sense. The positivist grants these modes of awareness a very limited validity, but denies that anything more satisfactory or comprehensive can be attained.

For the positivist, statements about the world in which we live are futile when they cannot be strictly verified by sensuous observation. They may be called meaningless, since statements that cannot be verified make no contribution and carry no meaning. They are not really *statements* at all, since they are not genuine assertions about the nature of some thing being described; but they are expressions, or at times unconscious revelations, of beliefs or attitudes that indicate the preferences or the prejudices of the speaker. The "positivist" (as he is described here in opposition to the "philosopher") insists that philosophical statements about "life" or "reality as a whole" are not strictly verifiable. Speculative philosophy will then be interpreted as no more objective or responsible, logically speaking, than lyric

poetry. Philosophy thus appears to the positivist as a clumsy sort of self-expression far less attractive than that of the poet or the artist, and no more significant logically. Thus on the positivist's view, the mechanist does not really tell us anything about our world. But he does reveal his own interest in taking things apart and putting them together. Again, in the case of the formalist, the vitalist, and the creationist, each reveals his own interests and aptitudes, but according to the positivist, does not tell us anything about the ultimate nature of things.

Diametrically opposed to the positivist stands the mystic, who insists that he possesses an immediate or intuitive insight into the nature of things. Such insight reaches beyond the philosopher's speculation, assuring us of the presence of a creative power upon which all finite beings, including ourselves, depend for their existence. Thus the mystic is not only aware of God's presence but seems in some way to participate in God's love for his creatures, and so to penetrate the secret or the purpose of life.

The mystic insists that we may acquire knowledge of our world through a sort of direct perception, comparable perhaps in its immediacy to our sense of duration or the passing of time. He further insists that knowledge acquired in this way is more certain and more valuable than the findings of the scientist or the theories of the philosopher, both of whom talk *about* objects that stand, so to speak, at a distance from them and in which they do not participate—as, say, a singer participates in a melody. In this way, the saint sometimes insists that he has felt the presence of God even as in conversation we are all aware of the personalities of the friends with whom we communicate, whose ideas we share, and with whose purposes we sympathize.

Just as the position of the positivist is closer to that of the mechanist than to that of the other modes of thought, so the mystic stands closer to the position of the artist. The mystic's vision of reality is in some ways comparable to our sense of beauty. Our appreciation of a poem or a picture, our sense of its aesthetic or artistic excellence,

comes to us as a vivid and immediate awareness—not as the result of calculation or reasoning. Again, both mystic and aesthetic awareness transcend our powers of verbal expression. Thus it is almost impossible to translate the beauty of a painting or of a symphony into words—or for that matter, to paraphrase a poem into prose. Just so, the mystic frankly despairs of describing his vision accurately or exhaustively in words. We know *that* God is but not *what* he is.

Although standing at opposite extremes, the positivist and the mystic have something in common. The mystic is often certain that without his intuitive awareness of the creative power in things he would have no more insight into reality than the skeptical positivist. Neither positivist nor mystic is inclined to believe that human thinking can describe the world. Both believe that understanding must be supported by experience. At this point the positivist argues that since we do not observe or experience such entities as God or the world as a whole, we can say nothing about them with any logical security. On the other hand, the mystic insists that we are immediately aware of a creative God upon whom we ourselves seem to depend, but that this intuitive knowledge cannot be reduced to systematic form or rendered satisfactorily in words. The assurance with which the mystic speaks is not a rational one, since it cannot be communicated to a public by means of a logical argument, although something of the mystic's enthusiasm may be shared. This enthusiasm sometimes leads the mystic to scorn the more pedestrian methods of the philosopher. The mystic senses the infinite wealth of existence and contrasts it with the conceptual schemes, the tables, graphs, and definitions of science and philosophy.

All theory is gray, and green the golden tree of life ²

For love flies straight to God
But wisdom waits, a proud official in an anteroom ³

² Goethe, *Faust*

³ Angelus Silesius, *Cheirubinischem Wandersmann*, (1657)

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The mystic is sure that no science or philosophy can either exhaust or do justice to the wealth of reality that is open to the direct vision or intuition of the seer. Reality as a whole is a "deep and dazzling darkness" of which we can retain but a pale afterimage or reminiscence. Thus, we might say, reality may be "touched" but not "grasped" or comprehended. The mystic is not prepared to develop an argument or even an exposition. He can only call upon us to cultivate a certain detachment from the confusing distractions of everyday life and to wait patiently for revelation.

The philosopher stands between mystic and positivist. He does not expect to receive an illumination as complete and overwhelming as that of which the mystic speaks, nor is he likely to be satisfied with the positivist type of knowledge—certainly not until he has tried to gain a more intimate acquaintance with the world in which he lives and moves and of which he is, in some sense, a part.

Our civilization owes a great deal to the mystic and the positivist. The mystic, who is often a saint, has contributed greatly to the content of the higher religions and has supported and enriched our spiritual life in many ways. In fact, without the contribution of the mystic, religion, as we know it, would never have arisen and faith itself would be poverty-stricken. Furthermore, in recent years the positivists have, as was noted above, contributed significantly to the formulation of scientific methodology. But neither the mystic nor the positivist accepts the presuppositions or the objectives of the philosopher. Neither mystic nor positivist values the comprehensive "wisdom" that the philosopher seeks.

To be sure, those two types of people do, in a sense, "pursue wisdom," but they do so without having recourse to what is traditionally known as philosophical reflection. Both mystic and positivist are "skeptics," since they do not believe that philosophical speculation and reflection—that is, systematic thinking—can teach us anything of importance about the human situation, about man and his world. On the one hand lies the prophylactic caution of the positivist, whose methodology satisfies him that statements taking the form of specu-

lative hypotheses about "life" or "reality" as a whole are futile and even, very strictly speaking, "meaningless." On the other hand, we have the enthusiasm of the mystic, for whom the above-mentioned statements are unnecessary, since he can rely directly upon an immediate insight or illumination that will surpass our efforts to describe it. Both skeptic and mystic can repeat with conviction Ludwig Wittgenstein's famous maxim, "Those things of which we may not speak—thereof we must be silent." But how differently will they construe its meaning! The silence of the positivist is an act of renunciation, a sacrifice of our philosophical curiosity to our intellectual integrity. The silence of the mystic records the consummation of a vision for which no words are adequate. But between the positivist and the mystic, both struck dumb by their own "wisdom," stands the philosopher—and he goes on talking. Indeed, the philosopher may appear at times somewhat like a court jester who fills an embarrassing pause when the royal counselors find nothing to say. But after all, silence is not always golden, and it would perhaps be a costly business if we accepted the interdict that is promulgated, for very different reasons, always with such an air of authority, by both the extreme factions that are opposed to speculative philosophy. Unless the philosophers go on talking and, we may hope, thinking as cogently and as clearly as they know how, the imposed silence will grow intolerable. The human spirit abhors a vacuum, however reasonable or inspired its origin, and will fill it sooner or later in any way possible—if not by appeal to reason, then by appeal to authority, hearsay, or even superstition. If the philosophers decline to fill this gap, there are other professors of "wisdom" only too eager to take their place, and these will not be in the least deterred by the counsels of either the honest positivist or the saintly mystic. Banish the philosopher and you invite the cultist or the mystagogue, who substitutes irresponsible assertions for the hypotheses that the philosopher advances tentatively and in a spirit of self-criticism.

After all, the speculations of the philosopher, although perhaps at times somewhat less than practical, are responsible and self-critical.

It is just this honesty which often withholds the philosopher from dogmatizing and claiming a finality of orientation, as indeed some of his competitors do continually with varying degrees of plausibility. Yet despite his reservations, which are sometimes embarrassing, or perhaps more precisely just *because* of them, the philosopher reflects in his conscientious and tentative uncertainty, which after all he sincerely wishes to overcome, the true status of a human being faced with his world. He is conscious of what has been called the human situation more completely and more adequately than is the inspired mystic, the critical positivist, or the mystagogue with his esoteric symbolism and occult wisdom. The philosopher, as a member of the human species, "capable of rational discourse," exhibits his full humanity as much in the scope of his curiosity as in the cautious and disciplined way by which he undertakes to satisfy it. He finds that he is unwilling to avoid or to bypass the persistent questions that each age has formulated in its own way. The silence of the skeptic seems to him a refusal to consider matters of possible relevance.

But as he grows in wisdom, the philosopher is willing to admit that the obscurity of his own fragmentary vision is probably a result of his own limitations, which he hopes partially to overcome. He may even be willing to admit that he has been helped toward mature self-knowledge by the comments of the skeptic and the mystic, as well as by the lamentable example of the mystagogue. At any rate, he will make no effort to silence anyone or to compel anyone to speak. For himself, he will speak as clearly as he can and he will try to present as complete a report as possible. He will recognize and emphasize the fact that from each of the several possible points of view available to him his objective assumes characteristically different aspects. Consideration of these points of view and of their contrast must occupy much of the philosopher's attention. Such consideration is indispensable if he is to make so bold as to criticize the work of other thinkers, or even to consider their criticisms of his own observations. We may argue that the philosopher is

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aware of his human limitations and participates in the human situation with a clarity of self-criticism unmatched by other students. This deliberate self-criticism is philosophy itself. It has been defined here as the "pursuit of wisdom."

»» CHAPTER 2 ««

The Atom and the Machine

THE MECHANICAL MODEL

The first line of thought which we will follow is that usually described as mechanistic naturalism or materialism. To any person who has grown up surrounded by the technology of a highly developed civilization, the appeal of a philosophy that pictures the world on the analogy of a machine is very strong. This notion is so closely in harmony with our contemporary "common sense" that any twentieth-century student will be able to recognize through his own experience the philosophy to which it gives rise. If it were not for two defects, this point of view might well have become virtually an official common sense for our century. But there are serious inconsistencies between the view of nature held in this philosophy and our religious and aesthetic traditions; and there are serious philosophical inconsistencies within the position itself. We need to discuss both of these matters in a final appraisal.

The first formulation of a mechanistic, materialistic world view was the creation of the ancient Greeks. The Ionian city of Miletus on the seaboard of Asia Minor was both a crossroads for trade between Greece and Persia and a center of engineering and technology. Here a materialist philosophy arose in the sixth century B.C. Its cosmopolitan life, with widely divergent cultures and traditions existing side by side, was no doubt partly responsible for the total break with tradition which this philosophy represented. The urban environment, offering an acquaintance with major engineering

enterprises for the control of nature, no doubt helped form habits of imagination which issued in the new insight that nature is a machine, and that in this machine, laws of mechanics explain the interaction of natural units or parts.

The earlier Greek way of looking at nature had been one that saw its diverse phenomena as the separate domains of various gods and goddesses, each acting more or less unpredictably, but usually willing to be placated or persuaded by proper religious observances. It has been said that in trying to explain the sequences and connections of things, primitive peoples fail to see the distinction between those associated *in thought* only and those associated *in fact*. For example, much primitive magic operates on just such an assumption—since a man's picture is associated in my thought with the man, it is objectively related to him so intimately that I can cause injury to the man himself by defacing the picture. By an extension of this same process, one may suppose that primitive religion came into being as an explanation of causes and effects in familiar personal terms. I make things happen when I want them to happen, and on this analogy, the primitive scientist explains all happenings as the result of action by some being endowed with emotions and will. However inexact this idea may be as anthropology, it does seem to give some insight into the conventional Greek outlook as it existed before the invention of science and philosophy. As a reaction against such a point of view, the concept of nature as an impersonal theater of mechanical action is clearly a step of progress, whether we think of that progress as moving toward a desired elimination of religion or as a desired purification and extension of religion. The order of originality involved in this original break with the traditional world view is very hard for a modern thinker to conceive; we have indeed experienced no recent cultural achievement of this magnitude.

In trying to put ourselves in the place of these early Greek thinkers, it is helpful to picture ourselves at the workbench in the shop of an ingenious artisan or inventor. In this workshop world, where he spends his day, such an artisan is surrounded by jars and boxes

containing many kinds of mechanical parts. Being a good craftsman, he has sorted parts of each kind into separate compartments. About the shop, in process of being assembled, repaired, or taken apart, are various mechanisms—let us say, a clock, a toy car, a scale, and a shotgun. Each of these mechanisms is made from separate parts so connected that one part moves another, with a clearly predictable result unless one of the parts gives way.

To explain and understand a machine, our hypothetical inventor takes it apart—that is, he disconnects and separates the works until he reaches elementary gears, springs, screws, and rods that his usual tools will not easily break down any further. A Roman mechanic, confronted for the first time by a coin-operated slot machine and impressed by its seeming “intelligence,” must have gone home and tried to understand it by asking himself what made it work. Mentally, he would assemble one mechanism after another, until he hit on a combination of a counterweight, a sluice, and a lever that would work just like the water-vending machine in the temple: the weight of the coin on the lever opening the sluice to fill the basin, the coin rolling off into a collecting box, the counterweight swinging the sluice closed. “That’s how it must work!” he would say to himself, admiring the ingenuity of the device. It would not occur to him that perhaps some invisible god inhabited the interior of the machine, turning on a water faucet whenever the gift of a denarius pleased him. A poet might entertain such a fancy, but the mind of a mechanical inventor does not work in that way. The mechanical problems he faces are problems of parts connecting in such a way that they will “work”; he “solves” his problems by devising a working model, not, for example, by writing sonnets or solving mathematical field equations.

From the outset, there have been very exciting results when the phenomena of nature have been approached in this way. Naturally, confronted by the complex but mechanically regular motions of the planets and the stars, the question that occurred to the Milesian engineer was: “What makes them work?” In answering this ques-

tion, various models were devised that would duplicate the observed behavior of these celestial motions. This fashioning of models represented a discarding of the belief that the stars are alive or steered by resident gods, on the one hand, and on the other, of the suspicion that perhaps there is no exact basic regularity behind the apparent "wanderings" of the planets.

The first recorded Milesian model was one in which a set of circular hollow pipes, filled with fire, revolved about a common center. Each pipe except the outermost had one hole through which the light of the fire could be seen. Viewed from the center, the motions of these light points would approximate quite closely to the observed celestial motions. Now not only did this model suggest a possible mechanism for the motion of the heavenly bodies, but, as is often the case in this sort of research, one problem led to another and the model also suggested a mechanism for eclipses. Suppose opaque clouds temporarily and periodically hid the aperture in a pipe; the result would be an eclipse, and it would come about automatically without any special divine intervention.

The crucial significance of this earliest attempt on record to build a model of a complex natural phenomenon lies in the clear conviction supporting it that nature is a mechanical system which a scale model can duplicate. At this point, the philosophical attempt to extend this kind of explanation to the whole world and all things in it became a vital movement in Western culture. (The same position was developed independently in India, although under very different circumstances.)

PART AND WHOLE

Inevitably, once we think of the world as containing a set of "works" like our gears and levers, our next question is: What are the basic *parts* of the machinery of nature? It "stands to reason" that one must stop taking machinery apart somewhere—either the pieces are too small or too tightly connected to be broken down further; with a single solid cogwheel, the mechanic with a screwdriver has reached

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an "elementary" or "indivisible" part of his machine. To carry out the analogy of universe and mechanical model, some picture of the universe as having parts was required. For if nature was basically a qualitative continuum, why should its processes show regularities in quantitative behavior, and how could a model made of separate and independent parts duplicate a world that was really a flux of mingling, fluid qualities?

A Greek common sense adjusted to quality as prior to quantity must have felt that there was something unreasonable in the model-building enterprise. But the models did work. And another line of speculation, the Pythagorean use of applied mathematics, confirmed the existence of basic quantitative regularities in nature. The Pythagoreans discovered such regularities in the acoustics of music, in medicine, and in astronomy. As new suggestions stimulated new observations, models came to correspond more exactly to observed phenomena, with a resultant increase in mechanical complexity. (In our own century we can see an analogous movement toward complexity in the study of calculating machines considered as possible clues to the mechanism of the human brain.)

In trying to explain why these models worked, we are attracted by the obvious speculative suggestion that nature is itself made up of small separate parts, like a machine. So the similar behavior of the world and the model is not merely coincidental. This argument was directed against critics who had pointed out that a rigid mechanism of separate parts could hardly explain a material world which was unified and fluid. Such argument led to the atomic theory. (Throughout this discussion, we shall be considering atomism as a philosophical theory, based on the postulate of some basic indivisible unit or particle; the reader must not expect an "atom" in this context to be the "atom" of our modern physics and chemistry; the closest analogue in our modern natural science, as of 1954, is the electron or the neutron.) The basic notion of this atomic theory is that things are made up of small separate particles, which act on each other only when they come into contact, and which change in no way except by

moving from one place to another. The Greek thinkers who advanced this theory thought of these "atoms" as small chunks of stuff, of various sizes and shapes, all moving about in empty space. The world as an atomist sees it is made up of aggregates of these particles, differing in the numbers, the shapes, and the positions of their atomic parts.

If this view is followed, the proper method for any science and for philosophy is to analyze things into their "elements" (their least separate parts), and "explain" them by describing the mechanical interaction of those parts. This method is much broader in application than our illustrations from physics and engineering might suggest. For example, if we view each individual as an "atom" that is the elementary part of a society, an immediate extension to social science is suggested. In the humanities, we may think of the study of literature as concerned with establishing and arranging atomic "facts"—dates of publication, influences, and so on—which is again the "atomistic" point of view, with the "fact" becoming the relevant atom. Or should we try to interpret a sentence by looking up its words one at a time in the dictionary, we would be treating those words and their meanings as atomic parts, the aggregation of which forms a sentence.

The value of specialization is immediately evident if we accept this general method and point of view. There are so many "facts" about the human liver that a special student must devote his full time to recording and mastering them, and the same holds for other subject matters. In most fields, this ideal of the specialist who knows all the facts about something produces constantly narrowing specialization. In English literature, for example, the number of atomic facts in the period 1800-1900 is too large for anyone to master, so specialists divide the period between them. It is now possible for knowledge to advance, since the expert in the period 1800-1832 can treat it in more detail; yet not *all* the knowable facts even for this period can be handled without further specialization and subdivision.

Whether we do or do not approve of this model-oriented point of

view, it confronts us with a general logical or physical problem. On the one hand, the analogy to a machine suggests that the world, with its many separate parts colliding, cohering, and dispersing, requires an empty space in which the parts move and reside. This notion of "empty space" runs directly counter to ordinary experience, for an empty space of this kind has no qualities or properties, and one cannot possibly observe or experience such an entity. In fact, if we try to make clear what we mean by the assertion that "empty space exists," it is very hard to talk intelligibly. But empty space is peculiarly satisfactory in explaining certain features of ordinary experience. For instance, if there is empty space, then when something is compressed or expands we can easily imagine that this happens because the distance between its parts has changed. If there is no empty space, how can one explain such compression and expansion? Further, ordinary experience often sees the world as made up of separate items, so that the "atomicity" postulated of the smallest elements of nature is still apparent on the level of our common sense, where the separateness of individual aggregates makes an immediate impression.

The philosophical strength of this position lies in its generality. Analyzing and building models, looking for "the works" and "the facts," provide a single rule of method for all human activities and fields of experience. They provide a way of classifying knowledge: the physical atom is taken as the ultimate standard, and other fields are arranged in terms of the physical complexity of the elements they treat, with the assumption that all phenomena could ultimately be reduced to physical atoms if we could describe their full complexity.

We will want to consider some of the shortcomings of the model-oriented view, but first let us look very briefly at the atomic *elements* of language, of thought, of action, and of fact; in subsequent chapters, we will see how a different notion may lead to alternative treatments of the *anatomy* (rather than the *elements*) of these realms, or the *field* of each, or the *creative aspect* of each.

MECHANISM AND SYMBOLS

If we start with very general concepts pertinent to language, it is easy for us to see that symbols and calculation can be treated as "models." In experimenting with models, we may build full-sized mechanisms, but more often, scale models are simpler. Still simpler, however, is building a model of the situation with symbols—marks on paper, for example. Thus whenever we know that some property is present in an aggregate when it is present in a certain number of parts, connected in a certain way, we can use a symbolic model of the actual situation and predict by calculating (using construction rules) what the whole will be like, for given combinations of parts and properties. Suppose, for example, that a whole statement, such as "He is either foolish or wicked," is analyzed into its two logical elements "He is wicked" and "He is foolish." The proposition "either ... or ..." is a pattern of combination that often occurs in our experience, where a property present in any part transfers to the whole. In the case of statements, it is the property of "truth" in which we will be interested: "He is either wicked or mistaken" is true as a whole if either part is true. Using 1 to mean that a part or a whole does have a property, 0 to mean that it lacks it, we can now build the following symbolic models of "disjunctive connection":

1st part	2nd part	Whole
1	1	1
1	0	1
0	1	1
0	0	0

My models set up all possible combinations of paired 1 and 0 parts that can be joined in a disjunctive whole; we see that the whole = 1 when either part = 1. For disjunctions, however complex, and with whatever elements, we can now speed up and simplify the work of model-building by using this "calculus" of symbols on paper. For any whole in which the sum for its parts is 1 or greater than 1, that

whole also has the property in question if the parts are in disjunctive connection, and if the property is one that transfers disjunctively.

The entire formal apparatus of logic and much of mathematics can be built from this model of a "disjunctive structure," plus a model of "negation" (if something is not 1, it is 0, and vice versa). "Thinking," insofar as it employs mathematics and logic, can be shown equivalent to "calculating"—that is, to this symbolic model-building.

The content of language, as opposed to its form, involves two additional factors. Words identify different elements, aggregates, and properties as well as indicating forms of aggregation. We habitually associate the "meanings" of at least some of these words with an emotional response to them. When we are interested in precision and truth, however, we must correct for emotional aberrations and for the vagueness that some uses of words carry with them as to just what they designate. Perhaps most important of all, we, as atomists, must remember that there is a difference between a word or a symbol and a thing. Thus the word "humanity" exists in our language as a way of referring to a common property of various individual men, but there is no such *thing* as humanity apart from this set of individuals, any more than a "nation" is a thing distinct from its citizens. "Humanity" is a symbolic shorthand that abbreviates the very cumbersome listing of all the names of individual persons, and we use it in our linguistic models just as (above) we used 0 to represent "the absence of some given property." But the real parts in nature that correspond to the symbol "humanity" are the individual persons themselves, each taken as a unit. The reader will find, below, that a philosophy built on the "field" rather than the "atom" notion takes a precisely opposite view as to the existence of such things as humanity, the identity of thinking and calculation, the possibility of analysis of every whole into parts with only the relations of negation and disjunction connecting them, and as to most other features of the atomic theory.

MECHANISM AND THOUGHT

More challenging than this study of the elements and the mechanics of language is the study of the elements and the mechanics of the mind. In working out (above) the character of calculation, the model-builder believes he has already duplicated one part of the mechanism of "mental" experience; when we calculate, we must do something in the brain that is like the symbolic constructions set forth on paper, or like the circuits in an electrical computer which can duplicate this type of "thought." The mechanism of the mind is assumed to be located in the brain, and the atomistic philosopher sets out to identify the source of the power used and the elements that are connected in circuit patterns of calculation. To date, the electric and chemical circuits involving sets of brain cells have not been identified in detail, but successive models approach more and more closely a duplication of this kind of "thinking."

But there are many other aspects of "thought" that require careful analysis for explanation by the atomic theory if the theory is to succeed in explaining them. For example, our ordinary experience is not wholly composed of isolated parts (though the notion of the model may make its possessor peculiarly sensitive to the atomic aspect of his experience); *continuity* is a pervasive fact in human experience. Thus the wings of a flying bird move *continuously* from one position to another, the moments of experience flow smoothly into one another; the "space" studied in geometry is a pure continuum. As we shall see subsequently, a philosophy drawing its basic notion from the field of mathematics will often insist on a "law of continuity" throughout nature, language, and thought. This would be fatal to the atomic theory, for a set of discrete particles in contact is not the same thing as a real continuum. But the atomist devises experiments to show that continuity is something which our own senses supply. A pictured flying bird, for example, will seem to beat its wings continuously if we simply draw two pictures, one with the wings up, one with them down, and show these one right after the

other. The motion picture is a familiar application of this tendency to supply a transition between successive, different snapshots of moving bodies. What seems to us to be a continuity in nature may equally well be a fabrication of our thought, resulting from a blurring or superimposing of separate impressions. And as we try carefully to discover exactly and distinctly what it was we saw at a given instant, or what we were thinking about, the outcome of the analysis appears to be a set of elementary sensible qualities. Thus if we say, "I see this desk," and are asked to be more analytic and precise, we may notice that what we actually see is a brown parallelogram, which we associate with the name "desk" and with past memories of other qualities, such as solidity and a special convenience or utility; these other qualities can also be broken into separate parts like "brown" or "parallelogram." We may therefore say that continuity is a feature of things as they seem, not as they really are, and that we can build models in which successive separate states produce the appearance of a continuum. We must then relegate traditional geometry to a description of the structure of appearance, or revise it entirely. Thus "God always geometrizes," an epigram that seems almost self-evident to a Platonist or a Pythagorean, seems completely false to a defender of the atomic theory.

Can we now invest our model of the mind with typical human "irrationality"? A calculating machine is wholly predictable, and wholly reasonable; it will not be afraid in the dark and consequently make errors in operation; it will not be habituated by repetition; and so on. At first sight, it does indeed seem that the free play of association in the human mind defies reduction to any of the exact rules we could build into a machine. But this problem does not baffle the model-builder. If we actually trace the associations of ideas in the course of reverie, we find three rules applicable: (1) ideas of things with similar qualities are associated by us; (2) ideas of things near each other in place or time occur sequentially in our association; and (3) ideas of events are associated with ideas of their apparent causes and vice versa. These rules describe the structure of these

"random" chains of association pretty exactly. Further, we find that emotional tone forms part of association, in such a way that if a given picture is accompanied in our experience by pain, we come to dislike the picture. More complex inquiry into the content of dreams and the formation of attitudes reveals further mechanisms of blocking and substitution, but these, we may think, are no different in kind from those of perception or memory or association. While at present only the very simplest mechanisms that will "remember" have been designed, experiments with organisms simpler than the human can be interpreted as compatible with our theory that a model of the mind is in principle constructable.

We find that a model of the "mind" must calculate, remember according to associative patterns, "perceive" slowly enough to record rapid, separate sensations as continuous, and "form habits." None of these operations has been proved inexplicable in terms of our theory.

MECHANISM AND REALITY

Correcting for certain characteristics that the human observer is said to read into or create in his "experience," let us defer completion of the model of the mind until we have gone back to the model of nature and clarified the characteristics of the physical world. One reason for doing this is that certain basic difficulties of this philosophical position will become acute when we try to complete the model of the mind, and we will need to be very clear as to just what parts we do and do not have on hand if we are to evaluate the difficulties correctly.

In nature, our notion leads to the conviction that "nothing exists but atoms and the void." These atoms are moving, separate, indivisible, and so on. We perceive things when atoms from outside our bodies strike our senses. Some of the qualities we seem to perceive, such as continuity, are only apparent, not properties of the things themselves. Thus they appear differently to different observers, and differently to the same observer at different times and in different

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situations. Most "qualities," such as flavor, color, odor, and sound, cannot be properties of the atoms themselves, but rather are the result of interaction between the object and the observer. Just as you do not think the pain that results when you bump your shin on a chair is a quality of the chair that has somehow moved over to your leg, so it does not seem that the color of a piece of paper which different observers see differently can be simply a property of the atoms of the paper. Such "secondary qualities" are not part of things in themselves but, like continuity, only appear in the experience of an observer. On the other hand, mass, velocity, extension, seem invariant between observers and instruments, and these we treat as properties of the atoms themselves.

It must follow that nature is a concourse of material particles, qualitatively neutral, which exemplify principles of mechanics while pushing each other around, cohering and separating. If we knew all of the positions and velocities of the atoms making up the world at any given moment, we could theoretically calculate every future detail of the world's history, for neither the number of atoms, their momentum in aggregate, nor their behavior on impact can change. This theoretical calculation would include everything: what you will be thinking next Tuesday morning, what any given American citizen will eat for breakfast July 4, 1960, and so on; for all of these happenings are ultimately only the result of impact between larger and smaller aggregates of basic physical particles. The world apart from human peculiarities is thus not only neutral in its secondary qualities, but completely determined (as any mechanism is) in its operation.

In such a world as this, causes always operate on the present from the past; there is no place for such a thing as "future time." For "future states" do not now exist in nature, and never have existed; the impact on the present of the arrangements and the motion of matter carried from the immediate past is all that there is. "Purpose" and "freedom" are concepts to which we cannot give any genuine existential status, nor can we include any idea of possibility or of

"potentiality." When Aristotle, in his logic, suggested that a "possible" future event is genuinely undecided in its outcome at the present moment, he asserted a doctrine with which the atomic theory must disagree. In nature itself, if the world is really understood as a machine, we find no purpose, no future now operative, no undetermined periphery of alternative open possibility. To a poet, these conclusions do not seem credible; nor do they to a mathematician or a biologist, for other reasons. But in discussing the elements of nature, we must remember that our purpose is not to please nor to persuade various audiences, but rather to determine the objective facts.

The model-builder, to whom the conclusions just cited may seem almost self-evident, will be inclined to be very skeptical when anyone insists that his point of view is too limited to give a complete and consistent picture of the world. He will point out that in the past, opponents of his point of view have dismissed as "impossible in the very nature of things" almost every one of the major inventions and achievements that have been made. For example, it was once thought "impossible" and "unreasonable" to believe that "organic" chemical compounds could be synthesized from "inorganic" chemicals; the formation of organic compounds was thought to require some "vital agency" possessed only by living organisms. But such syntheses have now become so commonplace that it seems curious to us that their possibility could ever have been seriously questioned. Again, it would take a good deal of wishful thinking today to assert with much confidence that the mechanism by which organic compounds develop into simple organisms can never be duplicated by human artifice, though this duplication was once thought to be an evident impossibility.

In the face of constant predictions that technology must soon reach its final limits, its advances have continued for centuries. Just at present, we are witnessing intensive study of the "mechanism" of society while searching out new techniques for furthering human survival and welfare; and we are hoping that these advances will

be made before some of the recently developed techniques of destruction are put into action. Is there a mechanism of society? Are there techniques of social control? As has been noted before, a society is an aggregate of individuals with interests and locations sometimes leading to conflict, sometimes to stability. It has also been noted that a model of the individual's mind would account for the conditioning influence of pleasure and pain, things with pleasant associations being pursued, those with painful ones avoided. Evidently, a society in which some members lack basic commodities or lack a minimum status and prestige is going to be painful for some of its members and so lead them to hold strongly antisocial attitudes. If we base a model of human nature and conduct on the observed reaction to pain and pleasure, we can reformulate the political problem as that of setting up a society in which antisocial action has consequences that are uniformly painful. At the same time, we must try to make life in the community constantly more comfortable, secure, and otherwise pleasant. This goal is put forward as a factual description of human motivation and as a definition of progress. Philosophers less convinced of the postulated identification of motives with pleasure and pain, or less convinced of the identity of social stability, personal comfort, and moral excellence or true happiness, will question the completeness and accuracy of this view of human nature and conduct; but to sustain their objections, they also have to take issue with the atomic theory of nature and its correlated theories of the mind. For moral or aesthetic "values" do not exist objectively in an atomist's "nature," and in the "lower" or simpler animals that may be considered as first approximations or models of ourselves, conditioned behavior can be explained completely by the equation of pleasure with value. The atomist claims that his basic point of view does not rule out the study of values or of human moral choices, but instead analytically and objectively explains them.

In spite of the frequent discomfiture of past critics who have claimed that this model-oriented theory could never reproduce the mechanism of one or another class of phenomena, and despite the

proved utility and the clarity of this view of the world, there are limitations and difficulties to be considered. These weaken our faith that this is the best of all possible philosophical positions. In the first place, by using only mechanical action as its principle of explanation, this philosophy commits itself to the view that every person's actions and thoughts are produced mechanically, as a necessary outcome of events that have gone before. If man is really a machine, his decisions result from the purely mechanical interplay of detail within an environmental situation and an inherited structure. All our talk of freedom and creativity simply expresses an illusion. Very well; but where does this leave the proponent of this theory, who tells us that we ought to accept this hypothesis because he has examined its evidence and chosen it as the best explanation of nature and man? If his theory is right, the appeal to our belief would be pointless, since our attitude and our decision whether to agree with him or not would be the result of mechanical forces already predetermined. Furthermore, his own acceptance of the theory would likewise be the outcome of such a chain of events and his claim to any objective evaluation of this explanation would be mere illusion. He is merely reporting to us an autobiographical fact, and that is not the same thing as claiming the truth of his theory. Reason cannot easily accept such an awkward self-contradiction.

A second problem that the atomist must face lies in the question: How rigorously does he intend his analytic method to apply? This method has not, historically, always led to the same results, as is shown by the existence of three different versions of philosophical atomism. If it is rigorously applied, the analytic method may lead to the conclusion that we have no way of knowing whether there is any external world at all. The most popular form of the atomic theory has always been a *physical* atomism, which assumes that there is an external or physical world to understand, and sets about determining what the parts of that world and their forms of combination are. Strictly, however, if we accept the notion of completely separated elementary parts, such an objective world must

remain unknowable. For my "thinking" and "experience" would be processes taking place within my brain and body, completely isolated from events in other places except for occasional transmitted impact or shock. But the concept of "other places in an external world" is merely a combination of ideas within the mind. All the things we experience or think about are such internal ideas, and therefore more precise analysis leads to an atomism that is *psychological*, not *physical*. If we resent this conclusion, and try to see what the world looks like when we are not looking at it, we suddenly realize that this experiment cannot be made. (Nevertheless, almost everyone does for a moment try to catch a glimpse of this hypothetical "world as it looks apart from an observer," when he first hears the reality of such a world questioned.)

Such restrictive and rigid analysis results in the proposal that to be strictly consistent, we ought to build models only from ideas, psychological least parts, because it is of these that our entire experience of the world is composed. In a similar way, attempts to explain the concept and the mechanism of "mind" may turn out eventually to be analyzing "ideas" into elements of language. For instance, if as an experiment you hold a flag that looks green in front of me and you report, "He saw green," you may be asked, "How do you know?" Probably your answer would be, "He said it was green." Strictly, therefore, you have not directly experienced any "atomic ideas" in my mind; what you did observe was my verbal response in the situation. Your "model of your mind" will fit your actual observation very nicely if its parts are limited to such "verbal responses." (We might add some overt physical responses as well, so that "He is angry" could be inferred from "He struck at everyone within reach" as well as from "He said he was angry.") This line of analysis suggests that complete accuracy forces us to restrict psychological to linguistic or symbolic atomism, since, apart from our own minds, we never observe "ideas" or "impressions" that someone else experiences, but only are told about them. Perhaps the real atomic units should be symbols, and not ideas. In our own

century, there have been some explorations of such "symbolic" atomism. But this limitation is, when developed so consistently, very hard to accept.

A third major difficulty for this type of philosophical thinking has to do with the explanation of secondary qualities. Where do these qualities belong? In atomic theory, the parts of nature differ only quantitatively, but we perceive some of them as having qualitative differences. At first sight, there seems nothing wrong with an attempt to build a model from colorless parts that will have properties of color. Indeed, with spinning wheels that have black and white patterns on them, we can produce apparent colors. Certainly, we can set up waves and targets that are colorless but appear to us to be colored. But the difficulty lies in the fact that in our model of the brain, which is supposed to perceive these secondary qualities, there is no "we" watching. The model color-wheel on your table looks colored when you look at it; but you are not a part of the model—in fact your perception of it is the very thing the model is supposed to explain. If your brain is like the spinning black-and-white wheel, what recognizes that it is colored? Are you to think of a small observer, sitting and watching, as part of the mechanism of your mind? Has this observer then within his mind another, smaller watcher, who enjoys secondary qualities when the mechanism of the brain surrounding him supplies their physical conditions? Plato, who did not approve of model-oriented philosophies, devoted part of one of his dialogues, the *Theaetetus*, to a set of such awkward questions. If the mind is "a blank tablet," on which experience writes, who or what reads the writing? If it is a block of wax, impressed by contacts, who or what sorts and compares these "impressions," deciding which match and which do not? At last the "model," as he "improves" it, becomes a mad aviary, with the small observer inside it rushing about with a long hooked pole trying to grab the necks of passing birds as they speed by. There seems no way to answer this question within the atomic theory.

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In spite of these problems, however, which its critics have not been backward in stating, the view of the world developed from the notion of the model has had a flourishing career, and is, as has been remarked, a constitutive part of the common sense of our culture today. From the standpoints of comprehensiveness and consistency, its success seems unjustified; but this perspective does offer remarkable simplicity, objective vividness, and power. A single pair of postulates and a single rule of method are used to explain all phenomena; we can see and touch the models we build, and actually observe the mechanism of their operation, which explains why they appear as they do; we can point to continued human control of nature. For when our view of the world is oriented to the notion of a mechanism, we can sometimes imitate natural mechanisms for our own purposes, sometimes modify them to suit our needs, saving human effort and increasing comfort. Whether these advances of technology represent a real increase in human dignity, happiness, and welfare must be left here as an unanswered question; but to the philosopher who views the world as mechanism, it always seems that they do so.

» CHAPTER 3 «

Organic Structure

ORGANIC UNITY

The model or mechanism is the basic notion that characterizes one type of philosophy. This notion springs naturally from a world of invention, engineering, and manufacture and is easily applied to such a world. But for a person more at home in medicine and biology, a different aspect of things seems more important, and for him the model notion is likely to be replaced by the notion of the organism or the specimen.

A doctor, for example, must often consider his patient as an individual organism. Unlike a machine, an organism can seldom be understood adequately by the mere mechanics of its separately located parts. It has two peculiarities that a mechanism does not share. In the first place, the organs are so closely connected that to disturb one frequently disturbs them all, and in the second place, an organism adapts itself as a whole to changes in environment in a way that keeps its basic functioning intact and uniform.

The role of the physician is to help restore normal organic functioning when it has been disrupted by injury or disease. He is taught, or finds from experience, that he cannot do this simply by describing the mechanism of a patient, as a mechanist might advise him to, for two reasons. In the first place, he must have a clear idea of what a "normal" state is, and pure description of a symptom such as high fever says nothing about whether this is "abnormal"; this judgment requires an *evaluative* comparison of the total func-

tioning of the feverish and the non-feverish patient. In the second place, if we look at each bodily part as a separate mechanical unit, it turns out that a treatment calculated to restore one part to normal may also lead to disturbance of the other organs that have been left out of account. Suppose, for example, that a doctor has a patient who keeps sneezing and complains that his nose hurts. Ephedrine nose drops will act to relieve this irritation, and the doctor prescribes them. The case looks simple until the patient returns, this time complaining of insomnia, nervousness, and fatigue. What had seemed a simple medical treatment limited to his nose has had repercussions throughout his entire physical and psychological system.

The organism-oriented imagination thinks in terms of separate individuals. Although they are alike in many ways, each individual specimen or patient is distinct from every other. There is a difference between such individuality and that of the organs of any single individual; the latter are much more tightly integrated. Thus a philosophy based on this notion does not welcome the doctrine that indivisibility is a test of ultimate reality, as the atomic theory holds. On the contrary, the test of reality becomes the presence of reciprocally interacting organs in a functional system, and size has little to do with the case. A microbe and an elephant are equally genuine individuals; this fact can be understood only by considering them as organic wholes.

Clearly, the use of analysis in this frame of reference is much more complex than its use by the atomist; and historically, philosophical systems that express this notion best (for instance, those of Kant and Aristotle) are noted for their complexity. There must be a proper place for dissection, taking things apart; it is necessary to know the materials and the parts of animals. But an analytic technique that reduced a specimen at once to its ultimate chemical elements would, by such abrupt reduction, destroy the very things the experimenter wanted to study.

In addition to a catalogue of parts and connections, found by

appropriate dissection, we also need an accurate description of the total structure and functioning of a specimen, and this structural-functional dimension of "explanation" is just as important and real as is an "explanation" by analyzing the physical material. In fact, as was suggested above, the key concept for medical or biological explanation is that of function: on discovering a new organ, the first question we would ask as biologists is how it functions in the organism. The structures of organs make sense insofar as we can relate them to proper organic functions in the present system, or in the case of vestigial organs, to the functions these served in the evolution of the present organisms.

The relation of life to time and space is very different from the relation of atomic particles to time and space. The atom, having no parts, does not alter, except in position and velocity, as time passes; it is distinct from every other atom, and affected only through contact; it is wholly "unaware" of happenings in places other than its own. (It is well to repeat that this is not the "atom" of modern physics, with multiple heterogeneous parts, which is not "atomic" in the former sense.) An animal, on the contrary, has a definite life cycle: it is born at a certain date in time; it grows to be a mature or adult specimen; then it ages, dies, and ceases to exist as a living thing. Time is not at all extraneous to the organism. Further, a plant or an animal is aware of or sensitive to things happening in a space around it: it takes account of phenomena in other places. Moreover, its parts interlock so tightly that a notion based on their isolation is inadequate. The spatial relations involved are therefore also very different for atom and animal. Because of the constitutive role of time, we need to take account of the dynamics of their histories in studying animals: we see the young animal repeating a specific "life cycle" in its development.

Any scheme of concepts that does justice to this basic notion must be more than one-dimensional. To "understand" a specimen, we should know something about its ancestry—to what family its parents belong; something about its stage of maturity—how far

characteristics of an adult specimen have developed; and something about its individual physical make-up—is it a large or a small specimen, are its organs normally developed for its age, and so on? Every entity we approach may be studied along several lines, and constant distinctions are needed to keep the relation of these aspects clear, yet separate. A philosophy expressing this notion will try to extend to every field the balanced frame that has been most adequate when applied to the living organism. For example, Aristotle treated the “weight” of a stone as its inherent natural tendency toward downward motion, just as an animal has inherent natural tendencies toward specific kinds of growth and activity; and in another context, he called the plot of a tragedy its “soul.” But these statements did not represent a simple-minded *identification* of the stone or the play with an organism. In one respect, each is like an animal: the stone exists as a separate, connected material natural body; the play has a carefully functional adjustment of its parts. But the stone, while it does have a natural tendency to motion, has no parents, no life cycle, no differentiated physical organs that adapt to its environment; and neither has the play.

There are no evident internal inconsistencies in this type of philosophy; there is, however, an extremely delicate balance that must be maintained in order to keep the concept of “individuality” clear. The materialism of the atomist is too rough in its analysis to be adopted here. But if real things may come in all sizes, isn’t it just as plausible to take a continent or a universe as an “individual organism” as to limit “individuality” to particular animals? Yet if anything that has any intelligible organization is to be called an “individual,” we are on the point of turning this philosophy into a speculative idealism (of the sort discussed in the next chapter), and depriving it of the very distinction between individuals and aggregates or abstractions that is basic to the notion of organism. Individuality requires both that there be some intelligible structure and also that this structure be present in a physical matter in which its parts are connected and interdependent.

THE COMPASS OF PHILOSOPHY

In spite of its conceptual complexity, this is an attitude which is sometimes very close to "common sense." We would think it sensible to say that a person is more truly a single real thing than is a community of unconnected houses and persons. But common sense is not consistent in this matter. To hold a proper balance between the matter and the form of various kinds of things, the present position requires a very careful use of distinctions and a patience that undisciplined common sense does not share. And just as an organism is delicately adjusted, so a philosophy of this type, once a slight shift upsets the delicate balance of its concepts, will obscure or lose sight of the distinctive notion which it tries to develop.

ANATOMICAL METHOD

The notion of the specimen carries with it associations of anatomical dissection, which are not misleading in the present case. To distinguish existing organs or parts from one another carefully is essential to the method of all philosophies that develop from this notion. Even when they are well developed, philosophies of this type are very exacting in their demands on the patience and the attention of the reader. The more exciting over-all view of an organism as a whole comes only after the inquirer has carefully identified and described its parts, and such identification and description are always "dry." "Dryness" is not necessarily a bad quality in philosophies any more than it is in wines, but a taste for it is not innate, and has to be acquired.

The proper excellence of a philosophy which builds up from this "anatomical" method is completeness and clarity of organization. Every aspect of language, fact, or thought should be identified, defined, and distinguished from every other. The history of philosophy seems to show that in the few cases where the method is brilliantly successful—perhaps five times in two thousand years—this ideal of completeness and order has led thinkers to exercise the patience needed; but there are few traces of second-magnitude philosophies of this type: short of sharing the insight of a Kant or an Aristotle,

the inducement such systems offer is not great enough to secure for them attention or preservation.

In the present chapter, there are four main divisions: the anatomy of language, the anatomy of thought, the anatomy of nature, and the anatomy of practical activity. These are followed by a critical and comparative concluding section.

In discussing the anatomy of language, six main topics are considered. First, the different kinds of words that appear in language are distinguished; then the special group of "terms" to be used in science and philosophy is defined. The combination of terms into propositions, or statements describing facts truly or falsely, is next considered, and the four basic forms of proposition are identified. Next, the combination of propositions into "syllogisms," which are the simplest units of proof, is discussed. After this, we consider combining simple proofs into deductive systems, or "sciences." Finally, we define and note some of the peculiarities of the axioms, postulates and definitions the sciences accept, but do not prove; these "principles" of science comprise the final relevant topic of the analysis of language.

Trying to understand language and science as organic units leads naturally to the question of the thoughts that are being expressed. The anatomy of thought isolates six main levels of mental operation involved in theoretic knowledge. (That the number of subtopics is six in both these sections is only coincidental.) Reasoning is traced from the perception of qualities by the several senses, through the combination of these perceptions into experience of "objects," and the arrangements of related experiences in memory. Beyond the level of association in memory, three more operations are shown to be involved in thought—abstraction, conception, and intellectual intuition. The last of these is defined as a faculty by which the mind recognizes the essential natures of extramental things.

If we grant that we are capable of such intellectual intuition, and apply it to an anatomy of nature, the result is the recognition of four dimensions of reality, all of which must be shared by anything

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that is "real" in the fullest sense. In each real entity, we discern a goal or direction of development, a constitutive structure, a material body exhibiting this structure and changing toward this goal, and an external source of energy that supplies the impetus needed to initiate the change. Some kinds of things (such as the objects studied in mathematics) share some, but not all, of these dimensions; others share all of them. In the light of this analysis of things, we can now ask whether the mind is the sort of thing that is capable of knowing the world objectively, and of expressing this knowledge in language. An argument will be given favoring an affirmative answer to the question, but not proving the answer beyond all doubt.

In passing on to more specifically human problems, we turn to the anatomy of the practical, which is concerned with the questions of how people and societies can best further human happiness. Here are considered two main topics: (1) individual happiness, divided into questions of moral and of intellectual activities; (2) social excellence in relation to the happiness of the members of the society.

Finally, there are taken up certain disagreements in the reports of major thinkers who have been model anatomists. Some of the entities and faculties that appear in the most extensive and ambitious version of this philosophy (the version followed in the chapter's main line of organization) are not found in other competent anatomies. This is true of the faculty of intellectual intuition, and of the alleged ability of the mind to see purpose at work in things and to interpret such purpose as constitutive of extramental "reality." These differences seem to result from inherent difficulties of this anatomical method; apparently some of the processes connecting symbols with thoughts and thoughts with fact are not found by every method of dissection.

THE ANATOMY OF LANGUAGE

There is no single diet equally suited to all species of animal, no single habitat that seems good for all. Within the narrower range

of the human species, no single medical prescription can serve as a cure-all; the medicines and surgical tools of a physician must be of all sorts, and he chooses according to the needs of the individual case.

In considering the nature of language and its problems, one may use a similar approach. Words are tools that may be put to varying uses. One would naturally expect language to include in its development words and devices particularly suited to each of several kinds of use, and the philosopher or scientist will have to find some way of selecting the tools and patterns of speech that are best suited to the tasks that he wants language, as his instrument, to perform.

1. The Four Kinds of Words

Considering "communication" as an activity that can be subclassified into kinds, just as a group of animals in the same genus can be subclassified, we may distinguish the purposes, the materials, and the organizations of several kinds of linguistic usage. Sometimes the purpose is to communicate information: to describe a state of affairs, or to explain a conclusion that follows from factual evidence. Usually, such communication consists of verbal units, each with sharply defined meanings, combined in statements that are either true or false. "This grass is green" is a simple case of such communication. Alternatively, we may want to give commands or instructions; for this, we use imperative statements, which are neither true nor false, such as "Shut the door!" The words used designate agents, instruments, actions, and things acted upon; a complete imperative differs in form, parts, and purpose from a description. Further, language is stocked with "emotionally toned" words, which we avoid in constructing objective descriptions but use when we want to persuade (not to command) someone to act in a certain way. To do this, we must show that the action we are advocating is to the agent's own interest, and an obvious consequence of his likes and dislikes. Finally, in poetry we may communicate primarily for the purpose of giving aesthetic pleasure; the metaphor is a basic device

of such communication, and unfamiliar words and images, particularly when their sound and sense seem to enhance one another, are essential for creating poetry with maximum effect.

In ordinary language, the same word often carries a complex "meaning" entailing all these different dimensions. Also, the same grammatical form may be used for a persuasive statement, an order, or a metaphor, so that grammatical form may lead one to mistake wishes or directions for factual propositions. To avoid ambiguity when we want to prove, describe, or discuss objectively, the philosopher or the scientist urges that we carefully limit the relevant meaning of the words we employ, and confine our assertions to a small number of the simplest, least ambiguous forms. This restriction will result in a separation of proof from persuasion, direction, and poetry.

2. *Terms*

What kinds of words shall we select as the "terms" from which to build a "logic"? Clearly, we need words with fixed meanings; and we do not want emotional tone, aesthetic effect, or admonitory force to color descriptions of fact. We want to refer to classes of things, and to make statements about their natures and properties. Consider the statements "He took Jones's lawn mower" ("taking" is a neutral description of a fact), "He borrowed the lawn mower" ("borrowing" is an unobjectionable kind of taking, with connotations of sharing things among friends), "He stole the lawn mower" ("stealing" is a bad kind of taking, and intrudes an opposite attitude into the statement from the one we feel toward "borrowing"), "He bereft Jones of his lawn mower" ("bereft," an unusual word, is clearly used for its satirical aesthetic value). Of these words, the first is clearly of the type we have in mind for use in objective proofs and appraisals. In such terms as "taking," we find the smallest meaningful parts of language considered as an instrument of proof. Like good anatomists, we must now see how these separate parts

are organized into progressively larger units, until they can express and communicate philosophical and scientific theories.

3. *The Four Basic Forms of Propositions*

If terms are, so to speak, the cells that make up books of science and philosophy, we must next consider the basic combinations of these "cells" into "tissues." These are simple sentences describing states of fact. Such sentences, in their most streamlined form, will consist of two terms, one the subject, one the predicate, connected by "is," "is not," or some similar linking verb. Unlike separate terms, which are not true or false but simply name individual things or kinds or groups of things, these basic sentences, called "propositions," are always either false (when in fact subject and predicate are not related as the statement says they are) or true. For instance "grass" and "green" are terms, the first naming a kind of plant, the second a color. But "Grass is green" is a *proposition*, making a true or false statement about a matter of fact.

If we call the group of things a term names (or the individual thing it names) a "class," a proposition asserts one of four relations between its subject and predicate terms and the classes they name. Either the two are entirely joined, entirely separate, partially joined, or partially separate. Consider the following four statements:

All grass is green.
Some grass is green.
No grass is green
Some grass is not green

The first of these says that all the things called "grass" are "green" things; the first class is "included" in the second. The second statement is a partial inclusion; it says that at least "some" members of the first class are included in the class of "green" things. (For convenience, we will here use "some" to mean "at least one, and possibly all," so that the truth of statements of this second type will not prevent those of the first type from being true, and will not

imply that statements of the fourth type are true, though in ordinary English usage "some" often has this implication.) The third form of statement describes a total exclusion of one class from the other, the fourth states a partial exclusion.

These four basic forms of proposition are the simplest set needed to describe possible fact. Although their use sometimes gives rise to sentences that seem stylistically clumsy, these simple forms have almost no room for ambiguity.

4. Syllogisms Basic Units of Proof

Moving in our discussion of language from these "tissues" to something analogous to "organs" that they make up takes the form of moving from description of fact to more complex statements and inferences.

The smallest units of "thinking" are formed by linking two propositions with three terms so that they form a proof of a third proposition. For example, if we know that "all men are rational" and that "all Indians are men," we can reason to the conclusion that "all Indians are rational." We can do this because this relation of "men" and "rational" (the former is completely included in the latter) and this relation of "Indians" to "men" (again, the former is completely included in the latter) can be facts only if Indians are included in the class of rational beings. The class "men" is known to have a definite relation to the two other classes, "Indian" and "rational" (it includes the one and is included by the other), and from this mutual relation to the common third class, the conclusion stating the determinate relation of "Indian" and "rational" follows.

Such a unit of statement, in which two propositions are linked (through a common "middle" term) to prove a third, is called a "syllogism." But as we examine combinations of propositions having a common middle term, it becomes clear that some of these organizations may seem to be proofs when they really are not. For example, the propositions "All men are animals" and "All fish are animals" are not adequate to prove that "All fish are men," even though the

ORGANIC STRUCTURE

two propositions do assert determinate relations between both "men" and "fish" and the third class, "animal." But to a superficial inspection, this "argument" looks enough like the proof "All men are rational, all Indians are men, therefore all Indians are rational" to fool the unwary. But the difference is this: the latter argument, which is a genuine proof (for the conclusion could not possibly be false if the evidence is true), has a "middle" term that, as has been pointed out, includes one of the others and is included by one. Abbreviating the middle term by M , the subject of the conclusion ("Indian" in this case) by S , the predicate (rational) by P , the general form of this second argument may be stated as: M is inside P , S is inside M , so S must be inside P .

This form of argument is:

$$\begin{array}{l} \text{All } M \text{ is } P. \\ \text{All } S \text{ is } M. \\ \hline \text{All } S \text{ is } P. \end{array}$$

But in the former argument, the relation of "fish," "men," and "animal," was otherwise. Using S for "fish," P for "men," and M for "animal," the connection took the form: P is inside M , S is inside M . From these two items of information, it is not possible to tell what connection must hold between S and P , and no determinate conclusion will follow.

The form of this second argument is:

$$\begin{array}{l} \text{All } P \text{ is } M. \\ \text{All } S \text{ is } M. \\ \hline \text{(No demonstrated conclusion)} \end{array}$$

The frequency with which, in everyday practice, arguments in invalid forms are accepted as proofs shows that ambiguities of individual words cannot bear all the blame for fallacies and confusions based on language. The organization of a piece of thinking may be defective even though its propositions (organs) and terms (tissues) are

sound; this happens when they do not function together, but are wrongly connected. In textbooks of logic, rules for testing syllogistic proofs for correctness of connection of premises and conclusion are given; here it is enough to note that there is a need for such rules.

5. *Science*

Assuming that we are successful in avoiding intruded emotional tone, obscurity of statement, and invalidity of reasoning in a set of individual syllogisms, the next stage is to combine these syllogisms into chains, something like the connection of organs in an organism. A chain of proofs is not useful unless the initial evidence is at least as clearly known as the conclusion it proves; we therefore try to show our conclusions as proved from more general, better-established premises. The model for this sort of procedure has for a long time been Euclid's *Elements*, in which the theorems of geometry are proved in a continuous chain of reasoning, extending from initial axioms, postulates, and definitions to very complex final theorems. When we can order our knowledge of a set of facts in this strict way, the result is in many ways comparable to an organic whole.

In this "organic" method of inquiry, a "science" shows why things happen as they do, or have the properties they do, by showing how individual cases are related to more general laws of nature or more basic concepts. For example, a science of ocean tides deduces them as complex effects of the moon's gravitational pull and the relative rigidity of land and ocean on the earth.

Furthermore, science does not mean a single, unified body of investigation, for there are many separate sciences. For instance, the abstract figures and numbers studied in pure mathematics are basically different in kind from the concrete organisms studied in biology, which in turn are basically different from the communities of rational agents studied in politics and law. If the same word is used in several sciences, it has a different meaning in each one:

a "high" note in music is not "high" in the same sense as it is in the "high" cost of living in economics, or as in a "high" mountain in geology. Thus the significant resemblance between sciences does not admit the assumption that they are all parts of a single organic science.

6. *The "Principles" of Science*

Each of these several sciences deals with one group of things, and its proofs, as has been said, begin with certain basic propositions identifying the properties and the objects that are its subject matter. The reader will recognize these "starting points" in Euclid as the axioms, postulates, and definitions which appear at the beginning of each Book. Physics as well as geometry has such basic principles: distance, motion, time, force, and mass are the basic concepts indicating the common properties of the subject matter of the modern physicist: there are no still more basic physical properties in terms of which he can define these. Physics is developed by finding general propositions relating these basic concepts, such as "Force equals mass times acceleration," from which as premises the detailed physical phenomena can be "demonstrated" or "explained." The fact that a proof is useful only if the conclusion is less certain than the evidence used to prove it means that the basic concepts (axioms, postulates, and definitions) from which sciences start are not proved, yet that they must be known more certainly than any of the explanations in which they appear. This raises a basic psychological question and a basic factual one: Are there in fact such basic properties of the things studied by each science, and if there are, can we know them?

THE ANATOMY OF THOUGHT

At this point, our study of the anatomy of language must be shifted to a study of the anatomy of thought. For language exists primarily as an instrument of communication, which presupposes thinking persons who wish to communicate, and statements are organized as they are *because* thoughts are organized as *they* are

Once more, let us analyze knowledge into the smallest cell-like parts that are themselves items of knowledge, just as language was analyzed into its smallest parts that were themselves units in communication. Recall that in discussing proof our analysis halted at the level of terms. This was done on the conviction that if organized bodies of statement were divided too far, the parts found would no longer help to explain language as a tool, because there would be nothing to distinguish them from the parts, say, of animals, shovels, or stars. For example, if "terms" were further analyzed into component individual sounds and letters, and these into visible or audible vibrations of physical atoms, there would be no "language" as a kind of thing distinct from "things" or "thoughts" left at all, just as an "animal" might ultimately be broken down into atoms of familiar chemical elements, but at the expense of destroying whatever distinctive features it possessed as an organism.

1. Sense Perception: Qualities

Beginning with the simplest sort of thing you "know," you may reflect that if you had no senses to acquaint you with qualities in the external world, you would never come to think or feel or know anything. It seems that your senses present you directly with qualities, which you see, touch, and so on, here and now. These immediate perceptions are of several kinds: you see color, feel heat and hardness, taste flavor, smell odor, hear sound. Color, flavor, and the rest are the "sensible qualities" that constitute your immediate experience. Notice that it is not yet said that these are "the sensible qualities of *objects*." The reason is that it is individual immediate qualities, not "objects," which are the smallest elements of "experience." You can, by analysis of your experience, come to be aware that you are now seeing a patch of "red" color without consciously identifying that patch with a red "object"; it is just an immediate present awareness of the color red.

2. Imagination: Objects

Ordinarily, however, and so smoothly that we are not aware of it, our imaginations fit together these perceptions of different qualities into "objects," by locating them together or apart in a framework of space and time. We recognize objects by an operation of "perceiving" what it is that has the qualities we notice, and this operation of perceiving objects used to be called the function of "common sense." Indeed, to doubt or question the psychological belief that the qualities we experience are qualities of *something* would be a serious departure from "common sense" however one may interpret the phrase. The fact that blue color and sweet flavor are both qualities of a plum you hold is accepted by your common sense and passes unquestioned. An "object" is a thing, like the plum, experienced by us as a complex of qualities together in the same place at the same time. If the reader will try to think away all relations of time and place that enter into his ordinary experience of the world around him, he will find the result to be an extraordinarily incoherent set of unrelated moments of awareness of isolated qualities. Location, distance, time, shape, motion, number are all properties of our ordinary world of objects, but not of the immediate perception of individual qualities by our senses. It is only when you imagine the blue color, cool feel, and subsequent sweet flavor of a plum as all belonging to the thing we call a "plum" that the properties of location, and so on, give some order to the immediate disordered rifle fire of stimuli to which your separate senses respond. It is only when we compare, locate, and arrange in order of occurrence our simplest sensations that we begin to see groups of repeating patterns in them. What we are most evidently aware of, however, is the "common-sense" world of objects. This is the world we discuss with each other, and find agreement about. We can only discuss "atomic" perceptions of quality indirectly, by beginning with the world of "objects" having such qualities, then trying to think the space-time matrix of this objective world away. Such a "thinking-

away" of time and space is never wholly successful; and though we may agree with the atomist that we can think of elementary perceptions of single qualities, the philosopher of the present type can find no case where we have direct experience of them.

This notion of an "object" as a thing having a location in space and time, and possessing many properties simultaneously, does not mean that one cannot experience the qualities of a given thing at different times, just as you may taste the plum after seeing and touching it. But the crucial point is that while a plum flavor is a totally different thing from a plum color, we say that both the color and the flavor belong to *the same plum*. Think again what the "experience" would be like, say, of a creature equipped with senses but unable to take the imaginative step by which you call the plum you saw and the plum you are tasting now *the same*. For such a creature, the seen plum and the tasted plum would be entirely different events, and it would be most puzzling for him to hear us describe them as "the same" (except that, of course, such a creature could not understand language at all, for this is basically oriented to classifications within a world of objects in space and time). Other, more dynamic, patterns also recur in our experience. Sometimes we see repeated cases of interaction between objects, in which contact leads to a change in one or both. Such observations are the basis of our concepts of "causal connection." This is another basic pattern for the organization of perceptions of separate qualities into a coherent "common-sense" world of experience.

"Objects," on this view, as has been suggested, are a first stage of composition of the "percepts" that are elements of knowledge; imagination or common sense is, on the anatomical analogy, like tissue, not like cellular structure.

3. *Memory and Association*

At this point, our method requires a branching classification of kinds of thought growing from these elements and basic compounds through various types of organization. One kind of order

connecting our thoughts is the interaction of memory and imagination to produce chains of association—sets of imaginative pictures started by some immediate perception and continued by memory of associated perceptions in the past. Left to their own devices, as they are during daydreams and undirected reveries, our associations follow a rather strict pair of patterns. As was said in the last chapter, we apparently classify experiences in memory in such a way that we automatically recall past experiences *similar* to present ones. Thinking of a house, we may think next of the street in front of it, and wander mentally through the town in which it stands; an event reminds us of other events just before or after it, and we remember these. Not all of our associations are of quite this specific kind, however; for example, when you put a pot of coffee on a hot stove, you remember other similar actions, in which putting a pot on a hot fire has *always* been followed shortly by the coffee itself's becoming hot. In such cases, where your experience of similar past cases has been frequent and always the same, you have a very strong instinctive expectation that this time the coffee will behave in the same way. This interaction of memory and imagination is a very valuable guide to action, providing clues to what is likely to happen in a given situation.

4. *Abstraction: Structures*

But it is evident that our inquiry cannot rest at this stage. There are two reasons for this. In the first place, there is an obvious difference between "thinking" or "reasoning," where we carefully exclude irrelevant ideas, and "free association," where we do not do so. Some factor not yet discovered, then, must distinguish the two processes. In the second place, if we had no way of talking and thinking other than by remembered associations of similar and contiguous experience, we could not give such a description of memory and imagination as has just been given. For this description assumes that each of us remains the *same* person, without telling us in what that identity consists; it assumes that we can ask about common laws

of association, though this question goes beyond any particular set of associations we can have; and so on.

Beyond the senses, common sense, imagination, and memory, another level of organization occurs in thought. We can classify and remember the *patterns* as well as the *qualities* of experiences. Such noticing of a pattern as a separate item is called "abstraction." This is the operation by which we derive such concepts as that of "triangle" from our experience, which nowhere contains mathematical triangles, but does contain visual and tactile shapes which are roughly or "just about" triangular. "Abstraction" is a kind of selective attention, by which we choose some properties of objects as those to be noted and remembered, and overlook other properties. The problem is, of course, to decide which properties we want to notice, and which we can afford to overlook.

Probably we pay most attention, when we are engaged in abstract thinking, to the quantitative properties of objects. These properties—number, figure, motion, relation—are characteristics about which different people agree very closely, and by noticing them we gain valuable insights and make predictions. For example, we may classify objects of a kind we see often in terms of the "dummy" or "pattern of blanks" that results if we notice only the common outline of the several imaginative pictures, not their differing qualitative content. A triangle thus seen is a blank framework in space; any concrete object which matches this outline is an instance of "triangle." Number, size, shape, and intercontact of their sensible parts are the basic characteristics by which objects are grouped together, systematized, and classified by abstractions.

5. *Conception: Classes of Abstractions*

To be precise, we must make a distinction between an individual blank outline and a class of related ones. For example, there are an indefinite number of spatial outlines equally "triangular." What makes these "dummy" or "schematic" triangles belong to a single class is that if we were to construct any one of them, the rule of

construction would be the same: to enclose an area within three straight lines. Such a rule for constructing a class of schemata may be called a "concept." A concept becomes, seen in this way, a grouping of abstractions into classes. We do this by finding a common rule according to which any outline of the class can be constructed in imagination.

So far as pure mathematics is concerned, nothing seems omitted from this anatomy of thought. The impact of stimuli produces perceptions of sensible qualities; these separate perceptions are fused together by imagination into experiences of objects in space and time; these objects are classified by the properties of their abstracted space-time outlines; outlines are grouped together in terms of the common rules by which sets of them can be constructed in our imaginations. Abstraction creates a new memory file, so that association, when we are "thinking" and not just "daydreaming," sorts out cases having a special kind of similarity; namely, a similarity in structure. Some of the individual differences in human thinking can be traced, no doubt, to different systems of memory files; these, in turn, may go back to different degrees of attention paid to the several qualities of an object in determining just what its schema should be.

6. *Intellectual Intuition: Parts and Wholes*

There is a further principle that becomes clear as we examine our habitual classifications of things. We have noted that we group things together on the basis of similarity in number, shape, and pattern of contact of their parts. But we also group them together when an intelligent being sees that the same rule for construction would produce their schemata. In these mental operations, we agree with other observers so regularly as to what is a "part," what a "whole," what a single "object," that such agreement fails to seem surprising. But if no further mental process directed abstraction, our classifications and agreements involving "parts" and "wholes" would be impossible to explain.

There are an indefinite number of alternative abstractions that we can make from concrete experience. For example, if you are interested in taste, you may proceed in a rather unusual way by noticing and arranging things according to a schematism of their textures, odors, and primary flavors (salty, sweet, sour, and bitter). Here the notion of a spatial outline does not at first seem to apply; true, we think of the compound of odor-texture-flavor as belonging to a single object, but our usual habits of visual thinking make the role of space in such a system of abstracted tastes an unfamiliar one. What we would actually do, however, would be to systematize qualities by setting up a kind of schema of the intensity of each, and the distance between them. This "distance" would be a mathematical property measuring the "sameness" or "difference" of tastes; terms would be defined by reference to spatialized "scales" of flavor. The resulting concepts in the taste-oriented mind would be wholly unfamiliar: stale turnips, household furniture, and twigs would fall in the same class because of a "woody" texture and flavor; cod liver oil and light motor grease would fall together as having similar texture (and sometimes, flavor²); green apples, hydrochloric acid, and white wine would be alike in flavor.

As a matter of fact, every object has an indefinite number of parts and properties. But the most hardheaded proponent of "abstraction"—of pure disinterested measure, with no intruded value or purpose judgments—would never describe a desk by measuring its sourness and bitterness. Why not? If he is giving an objective, disinterested description of the measurable properties of things, these seem just as relevant as hardness, height, surface area, and so on.

The answer seems to be that the idea of *purpose* runs through all of our discrimination of parts and wholes; a whole is an organization of parts, which you can understand when you see some common function that the parts in their interaction make possible. It is as if you asked yourself whether in designing an animal that would grow, reproduce, find food, and so on, you would order and select its organs in the way in which nature does. If there is some such

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unity of function apparent, then you recognize that this is an individual thing, a kind of whole; and having seen it as a whole, you then set about to find out what the relevant "parts" are. A common rule for a construction that serves some purpose is present in the formation and the classification of all concepts, though it is least evident, perhaps, in the mathematical realm. For example, if you ask yourself, "What is an animal?" you may answer, "It is a thing that grows, moves about, eats, and reproduces." These are activities of the whole creature; if you now ask "What are the parts of a given animal?" you may give as a first answer: "Its skeletal-muscular system, which is the structure that makes its movement possible; its digestive system, which is structured to make nutrition and growth possible; its sensory-nervous system, which makes adaptation to the environment possible; its reproductive organs"; and so on. Not only are you using a notion of a purposive order of the whole organism to locate and explain its parts, but further, you are using the concept of "growth" as a process through which the structures of organs gradually change into those of a mature specimen, capable of most effective functioning. The idea of purpose is apparent in the notion of a maturity or natural goal toward which animals grow.

This level of thinking gives a direct insight into the structure of things through recognizing an apparent purpose which that structure, when mature, serves. Such insight differs from "practical" reflection, which asks how things can be used to serve my own personal purposes at the moment. Looked at practically, a pig is useful as potential food; this is how it can serve my own practical interests. Looked at theoretically, a pig is an organism, which is self-contained in that the function and the relation of its organs are seen as purposive without reference to an end beyond the existence of the pig itself. And the classifications of things that the terms of language represent recognize these purposive wholes underlying different structures.

"Wholes" may differ in complexity and in kind. On the one hand, the structure of an artificial thing (a saw, a desk) is intel-

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ligible as a whole only when we take account of a user different from the thing, and a maker who has built it. (A partial exception to this rule that artificial things are not either self-contained or self-explanatory is the case of works of fine art.) In nature, we can differentiate between organisms and suborganic phenomena (though this is a difference in specialization and complexity of parts rather than any more fundamental distinction). We can further set up a special class of the "things" studied by the mathematician; these are "abstracted" properties, which don't "exist" in the same sensible, concrete way that desk or pigs do; and yet they are certainly "real." (A long philosophical discussion has been carried on as to the role, if any, of our sensitivity to "purposeful organization" in knowing and studying these mathematical objects, but it is not yet clear what the solution is in the framework of an "organism"- or "specimen"-oriented philosophy.)

The basic concepts of kinds of things that underlie science can now be traced to the insight into functional order which we come to know as the result of observing, classifying, and discovering similar classes of wholes in our experience.

THE ANATOMY OF NATURE

Turning now from the anatomy of thought to the anatomy of things, we reach the final stage of our philosophical inquiry. Let us begin by asking why our knowledge grows as it does in answering questions as to the causes of things, and in making accurate predictions of their future behavior on the basis of past and present observations. Prediction seems possible to an organism-oriented philosopher because so many phenomena in nature are *cyclic*; once we see the structure of a cycle, we can anticipate its stages as it repeats. In biology, a striking case of this is found in plant and animal *life cycles*, each species reproduces, and each member goes through a typical growth process that recurs generation after generation. The future patterns of growth of a given species will largely repeat the past patterns; and the reason for this is that plants and animals re-

produce by creating other individuals of the same kind; this is a kind of natural purpose present in them. (In the twentieth century we have to modify this concept somewhat to account for such exceptional cases as mutation and for the changes in species that an accumulation of minor variations may produce when such variations have a positive survival value. But our contemporary geneticists and biochemists are again coming to realize, as Aristotle did, that the basic *likeness* of parent and offspring is a much more striking fact than their *difference*.) The recognition of cycles of specific kinds comes, in turn, from discovery of the "causes" of the things that are involved in these cycles. Here, the word "cause" is being used in the rather special sense in which a cause is an answer to the question "Why?" In dealing with things, there are four relevant directions of "explanation" which answer this question. We may answer the question "Why does a saw cut?" by pointing out the hardness of the material from which it is made. We may also answer the question by reference to the shape and position of the teeth of the saw. Both answers tell us something relevant, but for a *complete* answer, we need to add "also, because someone or some force moves it," for of course without this transmitted motion the saw would not cut. Further, we must add that the saw cuts "because it was made by someone who designed it as a tool for cutting"; this basic reference to purpose is perhaps already included in the notion of a "saw," so that it doesn't seem to add much until we begin to examine the structures of hack saws, rip saws, and crosscut saws, which differ *because* their makers designed them with different uses in mind. In the same way, to understand *why* kittens play, we can answer in terms of the mechanical development of their bodies, which requires or causes certain activities. This explanation must be supplemented, however, by seeing their play as a developmental stage in the purposive pattern of growth by which a kitten comes to be a mature cat.

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1. *The Four Dimensions of Reality*

"Nature" consists of individual things, each of which is an intersection of the four "causes" just described: a matter, a structure or a form, a source of motion or an origin, and a goal of development. "Knowledge" involves two phases: (1) recognizing unified structures, and seeing the purposive direction in their development that relates different stages or parts to each other; (2) recognizing material "substructures"—forces and matter in the world of individual objects embodying structure and purpose.

Neither the presence of order and purpose nor the connectedness of matter in a given region is by itself enough to define an "individual thing." A society, for example, has an intelligible structure, yet its members are not concretely connected and are not always in reciprocal interaction as the "organs" of an animal must be. But a "pure matter" would be a region with no properties except cohesion or contact. Such "pure matter" can hardly be said to "exist" if "existence" requires form; and the biologist thinks the "pure, empty space" of an atomic theory is nonexistent or meaningless.

Individual things are so organized that they can act as specific moving causes to start other matter potentially like them developing in the direction of a form similar to their own. They do this through establishing an initial form in the material and lending an impulse to give initial energy for development. This is true of the organisms whose life cycles repeat. Ultimately, the energy required is drawn from basic invariant cyclic processes of nature, such as the cycle of the seasons.

2. *Mind as Part of Nature*

We ourselves are individual organisms in this world; we embody a directed pattern of growth, from infancy to maturity, and possess a capacity for experience that finally develops into intellectual curiosity. As this curiosity is satisfied by the development of science, we come to recognize some properties of nature that are not limited

to any one kind of thing, but apply generally. We also come to recognize that things differ widely in kind, and that no single super-science will be able to explain these basic differences, so that separate sciences are necessary. This is itself a general law of nature. Beyond that, however, it appears that all natural things involve form, dynamic source, matter, and purposive direction or unity. The same form is repeated in the causal processes that are circular. There are in nature no nonfunctional stages or parts of things. (Again, this law needs to be modified in the light of the concept of evolution, to say that there are no parts that are not now or have not been functional.) These basic properties apply to man as well as to the rest of nature. Consequently, our human capacity for reason, toward which the organism develops, is not nonfunctional. Just as an animal would not have organs of sight if there were nothing visible, so it would not have a mind sensitized to the vision of the forms and the goals of things if there were not such goals and forms. At this point, it seems that we can justify our previous concepts in logic and psychology, which could not be finally defended in the light of symbols or thoughts alone. We talk and think as we do because things are as they are, and we discover the way things are by progressive awareness of our natural faculties in discussion and thought.

There is one remaining difficulty that the argument must try to meet. Perhaps the proper function of reason is not to recognize the natures of things, but rather to see how they further our peculiar human interests. In that case, the theory of the world developed here is perhaps merely a very useful one, not necessarily true. We must remember, however, that from the very beginning, when "terms" were selected as the parts of language to be employed, elements of emotional character have been carefully eliminated, and also elements peculiar to man's practical interests. If when we look at practical reason we find that it always involves a distinctive reference to the wishes and the welfare of the reasoner, and that our previous theoretic discussion has not included such coloring by personal interest, we may conclude that we are able to know the differ-

ence between studying things as they are and things as they are useful to us, and that logic, psychology, and natural philosophy represent theoretical, not practical, uses of reason. Presently we must return to this objection, however; for the law that "nature does nothing in vain," if it were itself only a reflection of some human idiosyncrasy, could not be used to support the reliability of rational insight.

SUMMARY

Before going on to discuss the application of this philosophy to problems of a practical nature, it would be well to summarize the set of interrelated distinctions already made.

1. *Language*

We began with language, and found it capable of specialization to four distinct uses. Selecting proof and objective description as the aspect we would like to understand, we traced the progression of organization from *terms* through *propositions* and *syllogisms* to demonstrative *sciences*. Such organized sciences are based upon principles that, if the science is sound and its conclusions are true, must be known directly and more adequately than the conclusions that they are used to prove or explain.

2. *Thought*

Their linguistic properties alone would not explain the nature of these principles, because they seem to be tightly joined to thought as well as to language. Tracing this junction, we next set out on an inquiry into knowledge. Here we found a first level of *separate sensations of quality* that were organized into the common-sense world of objects; our experiences with these *objects* were associated in *memory* into sets of events and things. The principles of association in memory seemed to be qualitative similarity, physical proximity, and causal action. These alone could not explain *abstraction*, which is an alternative way of associating experiences, by paying attention

to *schemata* or *outlines* of unique individual things, and thus discovering new similarities. Such abstraction alone, however, seemed not to be equivalent to *conception*, for a *concept* was defined as a group of abstractions all of which could be schematized by the same construction rule. The concept therefore represented a recognition of the several schemata as parts of some more comprehensive organized whole. Turning our attention to what is involved in such a discrimination of *whole* and *part* (which we had been assuming possible throughout, but which the organizations so far described could not explain) we noted that an insight into *purpose* was the act by which we decided that something is a whole, and that this insight also operated as we proceeded to find out what its parts are. This final insight, for example, was what brought together the various outlines representing stages in the growth of an animal under a single concept of purposive sequential development. It also brought together the other schemata that fall under single concepts, though in the case of mathematics its operation was not explored, and seemed more tenuous. This insight into a unity that is purposive is the *intellectual intuition* by which the mind recognizes the natures of things, and classifies them. This recognition leads to the terms of science on the one hand, and to its principles on the other. This *intuition* as an act of mind is joined to the world of things so closely that in order to understand and appraise it, we were compelled to turn our attention toward nature itself.

3. *Things*

We found that nature consists of concrete individuals, which are the resultants of intersecting *causes*. Four dimensions of "causality" were found: each thing had a matter, a structure, a source of motion, and a goal toward which it developed. Neither form nor matter alone could constitute a *real* thing in the fullest sense. Within this world, some lines of causality were cyclical: a pattern of development repeated with little variation. In such cases, of which the biological life cycle was an example, this repetition itself provided a kind of

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goal: in biology, the recurrence of individuals of the same kind can be understood if we grasp the purpose of reproduction as the perpetuation of a species. Among the things existing in nature, we can trace an ascending scale of complexity, from elementary qualities through compounds to organisms; and, within the organic realm, an ascending scale of complexity of organization and function from very simple forms of life to man, an animal with the faculty of reason.

From the survey of nature, it appeared to be a general rule that there is a harmony of organism and environment, and that there are not nonuseful or capricious "parts" to be found in natural wholes. For example, animals have organs of sight because nature contains things that are visible. Applying this same law to man, we inferred that man has reason because things are intelligible. This inference, or insight, leads us to accept the reliability of knowledge as a guide to the natures of things.

This analysis was throughout a disinterested inquiry, in the sense that questions of human interest and value were not explicitly introduced into the appraisal. There remains to be seen the result if we re-examine the world in the light of what it offers for the well-being of a rational, social animal. Let us now inquire into the nature of the world as seen from this standpoint of human happiness and survival.

THE ANATOMY OF PRACTICAL ACTIVITY

In dealing with man in society, we must first recognize that if some processes in nature are circular, others are not. Phenomena of which the causal agent and the thing caused are different in kind tend to be linear in pattern. For example, as new materials and new power sources are discovered, we may expect the design of tools to change continually, and discovery of or forgetfulness of tool design will not necessarily show any regular cyclic pattern, as animal growth or stellar motion do. In dealing with such linear phenomena, we cannot hope for the same kind of insight that is possible in

astronomy or biology; what remains constant is neither the form nor the matter, but the inventor and the basic needs that his inventions serve. Since the physical and biological laws of motion, growth, and causality are determined by the study of a sequence of forms that appears in a repeating, cyclic process, the methods of physics or biology will be only partially applicable to the study of human institutions and techniques. Because of differences in the kinds of thing treated, we cannot, except insofar as we treat basic constants of human nature, make from past observation the same inferences for the future that are possible in the natural sciences.

1. *Ethics: Individual Happiness*

These constants of human nature, which seem destined to remain constant so long as the species continues, are not specific as to the behavior they determine. Like other animals, man needs food and shelter; he is able to move about to look for these, and to avoid discomforts and dangers; he has ability to perceive the world around him. Beyond this, there is a latent capacity to form the complex habits involved in using language, living in a community, and conducting intellectual inquiries. As with other animals, there is a natural direction to human growth; the various capacities develop toward realization. But these needs and capabilities in themselves do not necessitate one rather than another kind of social organization, or pattern of technology. While an adult rational animal is capable of co-operative association with his fellows, and of using deliberation to meet problems, the extent to which his personality matures, and the habits of thought he holds, will depend on the culture within which his natural capacity for forming habits has been exercised.

In studying the individual, it is necessary to determine what the natural capacities of man are, how they can be developed in a social environment, and which lines of development constitute the fullest realizations of the proper functioning of a rational animal. The study of ethics, of what is good and right from the point of view

of the individual, is thus grounded in biology and philosophy. If nature always produces creatures that develop purposively toward a goal, the natural good for men will be to discover what constitutes their full development and then to attain it. Further, the best set of institutions for a society will be that which best promotes the self-realization of the particular individuals of whom it is composed. Such social institutions, like other inventions, will not follow a cycle in their growth and change, because they are not really "organisms" in the full sense and cannot reproduce themselves as tightly integrated organic structures do. Every person who is potentially rational and who grows up in a social community becomes aware, more or less clearly, that there is such a thing as distinctive human excellence and full, balanced development. As this awareness of the inherent "final cause" of man is dimly recognized in observation of our fellow citizens, the recognition is expressed in the form of admiration, respect, and praise for some persons and actions, of blame and disrespect for others, even when our own interests are not immediately involved. As we recognize ourselves to be like these other persons, this awareness takes the form of a sense of duty, a feeling that we ought to do some things and avoid others if we are to maintain our self-respect and enjoy the fullest life of which we are capable. These judgments are the product of our natural impulse toward growth and full self-realization that makes us feel an immediate personal interest in ethical questions.

Consideration of what we should do, or what we should admire, leads the philosophy of organism to a balance between two other possible positions. On the one hand, man considered as an animal is basically interested in survival and comfort; he will take pleasure and pain as sure, simple guides to what is or is not "right" for him to do. An "atomic" view of nature is, we have seen, usually accompanied by an ethics in which decisions of good and bad are the same as decisions of probable pleasure and pain. In such a philosophy, there is no real difference between natural and social science, nor between physics, ethics, and biology. On the other hand, if man

were a purely rational disembodied intelligence, passion, emotion, pain and pleasure, would be matters of complete indifference to him; food, rest, comfort, friends, and all such features of normal life would seem wholly irrelevant to his happiness. (Both in India and in Rome, there have been thinkers who defend this view of life, and urge us to admire the detached "sage" as the man who most fully attains human dignity.)

If, however, as our interpretation or "location" of man in biology and psychology indicates, he is a rational animal, the best human life cannot be either the blind following of feeling characteristic of a beast or the detached, inhuman isolation of an apathetic, disembodied mind. Human action comes sometimes from habit and feeling, sometimes from deliberation and thought; without the other, neither can explain our everyday behavior.

Pleasure is not a sensible guide to follow in the pursuit of happiness, because all habitual activities *taken in themselves* are apt to be pleasant, although in many cases they interfere with any sort of complete growth, are often censured by our fellow men, and are recognized by the agents themselves as actions which, though pleasant, one ought not to perform. Habitual excessive drinking is a good example of such an activity. The many ways in which people can develop their capacity for habit formation show that there is no invariant biological connection between what is humanly desirable and what is pleasant, just as our biological structure does not commit us (as it seems to commit some insect species) to any unique form of society.

a. Moral Virtue: Habits. As a basic principle, an old Greek proverb, "Nothing in excess," seems to hit the mark in judging which habits, in regard to our appetites and tempers, are better, which worse. Excessive irritability, lack of spirit, greed, lack of capacity for enjoyment, are traits we do not admire and cannot reconcile with either our concept of what man aims at or that of what we ourselves ought to be like. These traits are matters of habit in emotional response; a balance between the extremes is

most desirable. We need only imagine ourselves at each extreme in turn and see where we would feel least discomfort; that is the extreme we naturally lean toward, and we should try to act in a way that will shift our habits away from this end of the scale. (Imagine yourself, for example, improvidently donating a week's pay to a charity, then having to ask friends for food, as opposed to donating ten cents or a quarter to a charity when everyone else in your community, including people with smaller incomes, gives five dollars. Your relative discomfort, if you are honest in imagining yourself in these situations, is an index to your habitual direction of deviation from the mean in respect to "liberality"—the habit of observing the mean with reference to giving and getting goods and money.)

In respect to social behavior, once more we admire "justice," a mean that involves honesty and objectivity. We see ourselves as members of the community, entitled to certain rights by our membership, but from the standpoint of society, no more entitled than another citizen to put our self-interest ahead of equity.

b. Intellectual Virtue. In respect to cultural and intellectual development, the rule of the mean does not apply. These are things of which one cannot have too much, though their pursuit does not justify neglecting other responsibilities as a person, a parent, and a citizen. Although it is perfectly possible to have knowledge yet to act counter to it from habit, the objectivity needed for social life and the insight required to direct the habit formation of our children, and through self-control to rectify our own behavior, springs from the development and the application of our capacity for reason. It is because we are rational animals that we are curious to know what makes for human happiness, and through reflection on our practical experience, to discern the answer.

Thus there is an interlocking or mutual relevance of the conclusions that we have already advanced concerning the anatomy of knowledge, that of fact, and that of our present examination of the organization of a happy life.

2. *Politics: Social Institutions*

Similarly, we can determine the proper function and limits, given specific existing conditions, of co-operative social endeavor. We would find once more that our organic point of view leads us to try to combine and balance an approach to social problems that is purely a study of the capture and the use of political power with an approach which is purely a study of abstract blueprints for Utopian communities. The actual political problem is the balancing and directing of present forces and conditions toward accepted ideals, by practicable, minute, yet sequential and cumulative changes in current institutions. The truth does not seem to coincide with an extreme simplicity in the solution of practical problems.

.As a postscript that will hold particular interest for some readers in the twentieth century, philosophers may ask whether expert prediction in practical spheres (ethics, economics, politics) is possible; or better, what kinds of prediction are possible, and why. Within the picture of the world as a plurality of individual organisms, there is no ground for supposing that social processes have a constant direction, or that they repeat. Consequently, prediction is possible in such a field as human history only insofar as some aspects of this history are parts of cyclic natural process. Among these parts we may think of the stages of the human life cycle, the constant needs of man for survival and reproduction, his constant attempts to communicate and co-operate in societies. But just how a given change will further or hinder the interests of a group is not a matter capable of precise determination, and the best guide here is to get the composite opinion of as many persons as possible. Their accumulated experience actually serves as a guide in anticipating probable outcomes and their desirability that no attempt at exact deductive prediction can equal.

For this reason, on practical issues we must hold that everyone is entitled to his opinion, though we will urge that everyone try to be sure that his opinion is based on as objective and as reasoned

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an examination of his experience and ideals as he can prepare. Viewed in the changing, colored light of its utility for us, the very nature of a thing shifts as conditions change; thus the pig seen as pork is more or less socially relevant as dietary habits and food supply vary. But the expert still has his place; the scientist in this tradition is not likely to feel that the fallibility of experts in political prediction will ever justify taking a referendum to decide whether it is socially desirable to say that two plus two equals four.

CONCLUSION

As a result of the classification and analysis we have just made of words, thoughts, and things, it seems that the notion of organism will serve very well as the central concept of a philosophical point of view. There is, however, a difficulty. It is comparable to a problem that the atomist has had to face. The atomist, we recall, as he moved from physical and psychological to symbolic "atoms," had difficulty in deciding where rigorous analysis finally led. We may accordingly ask, Granting that the notion of organism is applicable to our science, philosophy, and practice, what is it that is "organized"? In the present chapter, there has been presented—as was done in discussing atomic theories—the most ambitious and complex of three possible positions, one holding that *things* are organized, and that our minds recognize this because we ourselves, as parts of nature, share this property of organization. This would mean that whatever conditions are necessary to the existence of a world such as ours must be recognized as axioms for science and must be granted the status of objective fact. The same holds of those conditions indispensable to our knowledge of the world. If, for example, the observed uniformity of nature requires something to sustain it, the existence of such a sustaining principle must be accepted as a fact of science. If the possibility of science depends upon our human ability to act freely, and to see laws and relations not limited to the immediate present place and time, then such freedom and insight exist, and their existence is proved by the existence of science.

Sometimes a stronger statement is attempted, through the argument that if we were not free and thus able to notice and understand the less obvious characteristics of things, we could never conceive of freedom or of the universal laws of nature.

Suppose, now, that we question the inference that "our search for and awareness of purpose and wholeness in things is successful because things really are purposive, and because we ourselves have a natural sensitivity to purpose as constitutive of our own existence." Why could one not say, instead, that the sensitivity to purpose is a human peculiarity, and that our minds do not *discover* purposive order in experience, but actually *create* it there, because we would get no satisfaction from a world not so organized? In considering thought above, we found that the very active role of the human mind in interpreting and arranging the immediate maze of sensed qualities stood out clearly. Perhaps this arranging is less an illumination of something contained in experience, and more a superimposition of a satisfying sort of order on a chaotic raw material. In that case, it may be that science works only because all human minds are alike in their manner of ordering experience, and that what it tells us is not what objective states of things in themselves are, but what the subjective character of human experience will always be. If, for example, I can make sense of my experience of individual units of quality only by thinking of a "substance"—a thing in which the qualities I perceive are held together—this concept of "substance" might be interpreted as a natural way of human thinking, but not as representing what things are like apart from the human agent's experience of them.

This restriction of the framework of inquiry will lead to several points of difference between a thing-oriented and a thought-oriented organic philosophy. In particular, it means that in the latter certain questions cannot be answered by science; these are questions about things lying outside of possible human experience. Nor can such questions be answered by philosophy. The existence of a God who preserves the regularity of nature, for example, is demonstrated by

an argument claiming to lead from our observation of order in our own experience to a principle of order in the whole universe (which, of course, we can never directly experience). God is described as existing in his own right, not as a human concept, but as an extraconceptual fact. However, we can only know concepts, and therefore the existence of such a being is outside the province of possible knowledge or proof. The same limitation will apply to any argument that tries to reason from concepts to extraconceptual fact. Once we agree that the question "Have we any concept that is itself extraconceptual?" is a meaningful one, it is evident that the answer must be negative. God and a world of things in themselves become mere concepts or postulates if we question them in this way, because we never can perceive a being transcending time and space, nor an object independent of our perception. We may believe or disbelieve doctrines about these things, but we cannot prove them.

In the case of freedom, the situation is somewhat different. True, since we automatically and inevitably organize percepts into chains of sequence and contact, we will never find an event that has not some other immediately preceding it, and which will seem to be its cause. Nevertheless, we are aware of our own choice and activity directly, through an internal experience of it (not through observing our "selves" as phenomena seen from the outside) and we have a sense of "duty" or obligation that is explicable only if we have an ability to exercise free choice. This view still differs from the position Aristotle held, because for him freedom could be demonstrated by observation of lines of causality in nature. This view, in contrast to Aristotle's, involves a sharp separation of an "inner" and an "outer" experience (science can apply only to the latter). It leaves the reality and the existence of freedom assured, as a quality of the self that perceives, thinks, and makes decisions. Some contemporary thinkers have emphasized this distinction of inner and outer experience, making religion, morality, and sometimes metaphysics a matter of the former, while science is concerned only with the latter. The considerations leading them to do this spring from the success of

the model point of view in science. This success for a time led thinkers to believe that "mechanistic materialism" was the only possible philosophy that could make terms with "science," and that theories of morality and value could be preserved only if they were protected from scientific analysis and observation.

Recently, there have also been many lines of approach toward a third "organic" philosophy, which has not been entirely formulated as yet, in which *language* will be shown to be responsible for the organizations that we discuss and describe. Just as we introduce an order into a wholly haphazard heap of walnuts by "counting" them—that is, by arbitrarily naming each one in a way that projects the order of number words into the heap of walnuts—so other linguistic features may actually be projected into phenomena as we discuss them. With this in mind, we may ask the question: What results if we interpret the basic principles and distinctions of our world view as characteristic of the *statements* we make about things rather than as characteristic of things or even of thoughts? Thus sentences, not thoughts or things, occupy the center of the stage. In this restricted frame of reference, it will of course turn out that no argument from features of language to extralinguistic entities is possible. For example, terms such as "mind," "thought," "conception," refer in their linguistic context to certain types of verbal response. The whole realm of inner experience must, of course, be described by language through terms that are parts of, and are defined by, "outer" experiences; and there are no ways left of telling whether or not any "inner" realms of experience exist. What we call "thinking" on the part of an individual becomes simply "responding" to a set of words, with responses characteristic of the culture; the role of freedom in this process is problematical, the possibility of trans-cultural or intercultural communication may be denied, and the belief in some basic sustaining principle of nature (whether this is identified with God or not) may be viewed as a consequence of projecting a rule of grammar. (For example, if a language has a statement pattern of the form xCy (y is caused by x), where asking

about the cause constitutes an intelligible or meaningful question, we may assume that a meaningful response will be elicited when we substitute the term "nature" or "everything" for y , and may invent a new word, such as "god" to fill in the value of x where y is "everything." This invented word simply preserves the uniformity of a standard language pattern, but is easily mistaken for a new "entity" that has been discovered. The philosopher holding the present view of all organization as a projected feature of language is naturally critical of the notion that inventing names to fill blanks in statement forms really offers any "solution" of scientific or philosophical importance.)

The present currents in American philosophy reflect two directions or tendencies of thought bearing on the present problem. On the one hand, exploration of the extent to which philosophy can be developed in a purely linguistic dimension continues, and is not complete. On the other hand, the attempt to understand classical formulations of philosophical problems is increasing. This movement seems to involve a hope that we can use our more extended explorations of language and logic to contribute to philosophies based on a more liberal set of starting points, including thoughts and things as well as words. Which tendency is conservative and which radical, which will determine the direction of our future speculation, it is not now possible to say.

»» CHAPTER 4 ««

Form and Field

THE DIAGRAM AND ITS BACKGROUND

In this chapter, a type of speculation will be considered in which the imagination of the thinker centers upon the diagram rather than upon the model or the organism. Let us begin with a brief examination of the concrete experience from which the language of early Western physics and mathematics indicates that this orientation arose.

At the period in which the Greek engineers were trying to understand the "mechanism" of nature that accounted for the "wandering" of the planets about the sky, it is clear that the stars and their behavior occupied a much more important position in human experience than they do for most of us today. The succession of the constellations as they swung across the sky night after night served shepherds, soldiers, travelers, and sailors as a natural clock for telling the time and as a system of guideposts for finding one's way on land after dark. For the farmer, this clock served also to mark out the seasons, as, indeed, it did for the shipowner, who knew in this way when the season of safe navigation had come to an end. The varying length of night and day was also of practical importance, and Anaximander, the builder of the "stovepipe" astronomical model mentioned earlier, is also credited with setting up a simple device for observing this variation. Something of the importance that attached to the groupings of the stars may have been an echo of the older astrology, springing from lands farther east than Greece; but

Greek scientists, at least, seem to have discounted the superstitions of astrologers, and the ordinary Greek appreciated the regularity and the beauty of the night skies because it afforded him a practical orientation (serving as it did for compass, almanac, and clock), and a sense of being at home in his world.

Very early (and long before the rise of Greece), people began to see in the stars bright points embroidering designs of persons and animals, and to associate various stories with these celestial illustrations. The hunter with two dogs, circling about in constant pursuit of a large and a small bear; the dragon threatening the princess, with the hero hurrying to her rescue; and other such legends—these passed in review before the Greek watchers of the sky like a moving picture or an Assyrian relief sculpture. Embroidery, inlay, and the use of bright-headed nails in fancy carpentry all made the aesthetic notion of marking out a design by bright points a familiar one. Although the planets seemed erratic, the constellations (so far as ancient observers knew) stayed always the same, an impressive testimony to the basic uniformity of nature.

This observation of celestial designs marked out by points of light suggested the notion that the basic structure of nature is a sort of expanse or continuum within which determining points of some kind set limits and form patterns. The continuum may, then, be called the field within which the patterns take shape. This notion was reinforced by the normal experience of men whose lives were much less romantic and venturesome than those of explorer, sailor, or soldier.

The idea applies conveniently to agriculture. Wherever the land was fairly level, every conscientious farmer went out each morning to his fields—a part of the continuum of the farm-land plain—and, glancing about, noted that the boundary posts marking off his lands from those of his neighbors were still in place. Whether or not this farmer subscribed to the sentiment that "Good fences make good neighbors," he almost certainly watched closely to see just where the imaginary lines between cornerstones ran across the ground,

and carefully turned his ox and plow just as he reached his boundary. For the plowman, the figure marked out by these imaginary lines in the farming plain was a fact of great practical importance. In Egypt, where the annual flood of the Nile washed boundary marks away, from very early times much attention had been devoted to techniques of measurement by which each line could be quickly re-established. (Stakes and knotted ropes of known length were the basic equipment for this annual measuring.) These tactics constitute the ancestry of the science of "earth-measuring" or "geometry," though the theoretical development of this branch of mathematics was a Greek invention.

In spectacular contrast to the dark space of the night sky and to the pure space of the mathematician stands the "field" of the stadium, in which turning post and track mark out the pattern of vivid and exciting contests and races. (We may feel justified in connecting the notion of "field" with that of the "stadium" because one of the earliest and sharpest critics of the new geometrical physics and mathematics, Zeno of Elea (fifth century B.C.) used the example of rows of tiny solids (*onkoi*) moving past each other in the center of a stadium as a picture of events as they were described by the field theory.)

A geometrical imagination sees the world as a set of patterns in fields. The whole universe comes to be thought of as a "field" of space, in which points "defining" the locations of "things" occur embedded in the spatial matrix. The important properties of patterns are quantitative; the number, the distance, and the direction of stars identifies a constellation, the number, the distance, and the direction of boundary stones identifies the farm. In such an order of things quantitative relations or ratios are seen to constitute the very nature of familiar objects. The two most spectacular cases to be noted are the lengths of string that produce "concordant" tones on a musical instrument (the ratio of two lengths an octave apart, for example, is 2:1), and the approximate periods of planetary revolution (in years, about 1/12, 1, 4, 12, and 32 or 27). Further,

mathematical techniques in their initial application to medicine and city planning indicated remarkable potentialities.

In emphasizing the continuity of the field, this type of philosophy requires a new approach to the problem of the relation of parts and wholes. In a real continuum, every whole or part acts, if only slightly, on every other, so that there is none of the neatness of a natural order of separate individuals which the specimen notion engenders in philosophy. Nor is there any least part in a continuum, so that the basic postulate of the atomic theory seems counter to fact. Strictly, the whole universe should be treated as having the "density" or tight interconnection of parts that in the specimen view held only within individual organisms. For various practical purposes, it may be helpful to argue *as if* there were some natural lines of separation. The calculus, for example, may be a fine tool if we assume that we can distinguish very small areas or regions from one another. Or, on a larger scale, we may find it profitable to disregard some factors below a given point of relevance and magnitude. The gravitational pull of remote galaxies is thus disregarded by an experimenter with terrestrial falling bodies, because its effect is so very small. More formally, we can always set up an arbitrary rule that our description will take account only of regions within a given distance. Again, we can decide to treat as indivisible all areas under a certain size. But inevitable as these tactics may be, we are becoming increasingly aware that in science and philosophy the scope of each self-identical event or individual or region includes more and more. Take another patient whom our doctor in the last chapter treated; the doctor, we say, had a very clear picture of Mr. Jones as an individual, with a sharp line between Jones himself and the other things acting on him. The patient's job in a factory is not "part" of the patient in the same way that his liver is; if the job leads to lead poisoning and changes the functioning of Jones's organs, the doctor would not be inclined to say that Jones's present identity included or was constituted by his factory work, except insofar as some lead had entered his organism. But

this is clearly not the only way of viewing the situation. If Mr. Jones is really part of a field organized in a certain way, we could insist that his job in the factory was actually a part of his identity; the factory is a whole organization in which he is a part, the community a larger whole in which the factory is a part, and the lead poisoning may be seen as symbolizing a "social sickness" of some kind. The line between Jones's stomach and the emotional frustration of his work is very hard to draw sharply; to the structure-minded philosopher, the reason is that no such line exists: the whole universe exerts influences that make the individual what he is, and the individual reflects the basic structure of this whole universe.

The notion that we understand something better when we "get the whole picture" is a common-sense projection of this way of thinking. In the absence of any sharp mathematical line of demarcation between different regions and events, one tends to move on toward ever widening contexts in the attempt to see the wholes by which the various parts are determined. For here, in opposition to the atomic theory, it is not the parts that determine the whole, but the wholes that determine their parts. Often, therefore, in this speculative tradition, philosophers begin by trying to form generalizations about nature as a whole from which they can draw inferences about people and societies insofar as these are "parts" of nature, and like the cosmos in their mode of organization.

It may be worth while to contrast the "model" and the "diagram" orientations, both of which are very important in contemporary thinking. The model-builder sometimes interprets mathematics as another set of models. On this interpretation, it is the physical properties and structure of the "diagrams" that are relevant, not any further "objective" referent. Further, like other models, the diagram may be built up from and broken down into simpler parts; such "combinatorial" tactics have been used in pure mathematics. However, the atomist must maintain that wholes have no properties not the result of the properties of their elementary parts, and that "reality" consists of atoms having extension, location, and temporal

location (although they remain unaltered by the passage of time). The Platonist (for it is in Platonism that the main stream of diagram-oriented speculation is transmitted) holds that reality consists of patterns that are known only by thought, and which have no extension, no location, no participation in time (the atoms, though unchanging, endure in time and constantly grow older; figures and numbers subsist apart from time, and have no age at all). The properties of numbers and figures attach to them *as wholes*, not as aggregates of parts. The number 7 is exemplified by a set with seven members not because each member has a property of "sevenness," but because the set as a whole has this property. A mathematical formula for the area of a triangle or the motion of a particle in a field applies to the figure or the field as a whole (though in the derivation of formulae of the latter type, we arbitrarily set limits within the total frame). Analogously, the Platonist will contend that adding together the properties of all organs taken in isolation will not produce a description of a human organism.

Although he is sometimes willing to admit that looking at things "as if" some element theory were correct is helpful to technology, no Platonist has ever accepted the reduction of mind to matter and the mechanistic determination of the "model" type of philosophy. He argues that the model of the brain requires an intelligent builder, who works purposefully and is free to choose among various designs in the light of the whole enterprise at hand; and thus he insists that the mechanical interaction of parts in the model, which contains no sense of purpose and has no freedom, still refers, when we see the model in the broader context of its constructor and its intended function, to a universe in which intelligence, able to deal with wholes and free to choose among them, is a factor.

In the case of the mind, this denial of reduction of complexes to elements leads to an interesting set of speculative suggestions. If the stable, basic element that underlies the world is purposive or structural, it is only in something like a human person, who has an intelligence that can "see" eternal objects and senses which can "see"

physical change, that the two worlds of unchanging form and ever changing history can come together. This leads to speculative idealism—the class of philosophical positions holding that since mind alone grasps the reality of nature, nature must be like ideas in a cosmic mind. This, in turn, leads to specific questions intended to test the correctness of the speculative theory that nature is ordered with the same respect for consistency, simplicity, and variety that our own intelligences entertain. Can we use ways of looking at beautiful objects or noble human actions as keys to the explanation of nature as a whole? Is the world just? Has it evidence of respect for beauty, simplicity, and order? These questions follow, of course, from an attitude that regards the physical universe as a kind of diagram illustrating some eternal master plan, whether or not the approach is carried to the point of equating mind and reality. And it is worth noting that by certain thinkers—such as Augustine, Leibniz, and Boehme—the physical world is treated as a “sign” pointing to some intelligible referent beyond.¹

This line of reasoning may lead to a religious doctrine in which God is equated with the arranging cosmic mind. It may, without explicit religious emphasis, lead to an unlimited faith in the power of science to penetrate the “reality” behind appearances. (Thus a new piece of laboratory equipment was recently described by newspapers as “a means of determining the ultimate nature of matter.”) For if what is most reasonable is also most true, there is no screen cutting off reality from thought; and reasoning will provide newer insights into fact provided we aim always at seeing the whole picture of things in their interrelation, and keep our “science” moving toward the ideal of unity—a few basic laws from which all explanations are derived. (Leibniz’s writings are excellent examples of this use of “overarching hypotheses” at work.) Note that this is different from the mechanist’s ideal of controlling nature. This latter ideal dictates an almost drastic caution that withholds us from using

¹ Boehme’s work, *The Signature of All Things*, is a particularly explicit and extended exposition of this type.

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moral or aesthetic concepts to explain matters of fact. To the model-builder, such values are dismissed as subjective and unscientific; to the pattern-and-field theorist, they seem essential and constitutive of nature.

THE FIELD OF LANGUAGE

A study of language in the context of a diagram-oriented philosophy provides a clear illustration of the insistence on explaining parts by reference to wholes. In the first place, we will find that it is the pattern of an entire discussion that seems significant to the philosopher of this type, rather than the simpler elements that were used by the logicians discussed in the two preceding chapters. In the second place, when we try to deal with elements, and talk about the "meaning" of words, there is a complex field of meaning that surrounds the words, and any attempt to isolate "terms" or "dimensions of meaning" is rejected as arbitrary. In the third place, when we try to exhibit the most general patterns common to all uses of language, we often find ourselves employing "geometrical" diagrams to help us while we are describing and isolating such structures. The emphasis on mathematics, the view of the larger whole, and the refusal to analyze into separate independent or elementary parts are basic features of this philosophical orientation.

Throughout the history of philosophy, from Plato to Hegel and Marx, there have been philosophers who used a method called "dialectic," which is different from the "logic" of the Aristotelian or the atomistic tradition. Such a method tries to find and apply complete or "natural" patterns of explanation or proof rather than to test the individual linkages of parts.

Most of our own informal discussion and argument is not, we realize, carried on in rigorously logical terms; but neither is it wholly haphazard. The word "dialectic" comes originally from the description of "talking through" a problem and communicating with one another.

The simplest and most common patterns for such explanation of

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a meaning are those composed of synonyms and contraries. For example, you may want to tell me what you mean by the political word "conservative," and you begin by saying, "It means the contrary of 'progressive,' or 'liberal,' or 'radical'"—depending on which of these is most contrary to your intended meaning. You may also give me words or phrases that you think are very similar in meaning: "someone favoring retention of most features of the status quo," "respectable," "conventional," or near-synonyms of that sort. As your explanation goes on, you cite more and more similar and opposite words and phrases, until you have communicated your meaning to me.

An early stage in philosophical method, which appears independently in ancient Greece and modern Indonesia, and leaves traces in histories of linguistic change, is the use of a "table" of opposites to define basic concepts by stating their relation. For example, some of the Pythagoreans had such a "philosophical table," which ran:

LIMIT	UNLIMITED
RIGHT	LEFT
MALE	FEMALE
GOOD	BAD
ODD	EVEN
STRAIGHT	CURVED
LIGHT	DARK
SQUARE	OBLONG
ONE	MANY
REST	MOVEMENT

In this table, each concept is "explained" by its relation to the terms similar in meaning in the same column, and to those opposed in meaning in the other column. In our own conversation, we often approximate such a mode of definition by grouping terms together.

A glance at the various meanings of "dialectic" that have been used in philosophy confirms the notion that many variations of such patterns are possible. We sometimes use two opposites, not just one; for example, if you define "courage" as opposed to both

"cowardice" and "foolhardiness," you locate courage as a mean between opposed extremes. We sometimes use an opposite and a combination of the original term with this contrary in defining the color white, you might begin by saying that it is opposite to black, and that mixed with black it produces gray. We do not have to stick to near-synonyms and contraries, or means and extremes, in arranging the pattern; for example, Plato in a famous passage explains "virtue" by discussing virtue first in the state and then in the individual. The basic common feature underlying these diversities is the concept of a complete pattern of some kind, which gives meaning to both ordinary and technical uses of language.

When we try to isolate individual elements of language, we find, as dialecticians, that these do not come with clear-cut separate "meanings." Instead, any word or phrase takes on some of its meaning from the context in which it appears. This is seen in an extreme form in lyric poetry, where the reader may verify the almost totally different "meanings" of the word "dome" in Wordsworth's "Lines Written on Westminster Bridge" and in Coleridge's "Kubla Khan." The same dependence of meaning on larger context occurs in prose and conversation as well. For example, the word "conservative" may have been quite well explained in the context you gave of other words alike and opposed in meaning; but if you tried to isolate it from that context, and state in one phrase its precise meaning for you, you would find that this phrase could no longer make what you meant clear to someone else. The way to diagram this meaning relation of words seems to be to think of "meaning" as a "field" that surrounds each word, and shades off from its ordinary sense at the center to very unusual usages at the perimeter. These fields of meaning overlap in various ways, and taken together form a single continuous symbolic or semantic field. Dialectic now determines the intended locations of meanings in this field by marking out patterns that indicate in what region a given word falls. Without the larger context, a word or a phrase

may have an indefinite number of meanings, because in "understanding" it each person may presume a different context.

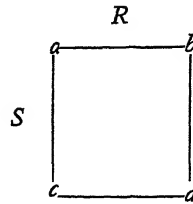
These two features of a field approach to language—that beginning with a whole pattern (of an explanation or a discussion) and that describing the parts of such a pattern as flowing together into a field—are characteristic of diagram-oriented philosophy in its approach to any subject matter or problem. Equally characteristic is the attempt to see the pattern more clearly by abstracting it from the field, and the use of mathematical diagrams or formulae to help us see the result of such abstraction.

For the reader who has no taste for abstractions of a mathematical kind, it is noted here that "patterns" of the sort cited above are called "verbal matrices," or simply "matrices," viewed in abstraction, and it is suggested that the remainder of this section may be omitted, or read *after* reading the remaining sections of this chapter, in which a dialectical method is used, and examples of "matrix" structure are given.

For the reader who wants to see how one can "formalize" such general patterns as those of "discussion" or "explanation," and build a mathematical theory of matrix logic, the following description of the concepts of "distance" and "direction" in a symbolic field is offered.

I. Matrices. A matrix is an ordered array of terms. In our present use, the "terms" are words or phrases, and we are interested in cases where several types of order operate at once, to produce a two-dimensional or more complex pattern of order. In a simple 2×2 square matrix, there are four terms, and each horizontal pair in a given row has the same relation, as does each vertical pair in the same column. (In the table above, for example, terms in opposite columns are "contraries"; evidently, no ordering relation operated in selecting the arrangement within each column, but we could introduce one.) Abbreviating the terms by $a, b \dots$ and the horizontal ordering relation by R , the vertical ordering relation by S , this pattern can be written:

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This shows that the relation R connects a, b and c, d , while S connects a, c and b, d . If R is, for example, a relation like parts to whole, other columns can be added in such a way that R connects them to the present figure.

II. Relational Products. In the unit square above, a , is related to d through the pair of relations aRb, bSd . We can treat this as the new relation R/S , called the "relational product" of R and S , and interpret aR/Sd to mean "There is another term related to a by R , and to d by S ." Evidently, one can have such products in the form R/R ; for instance, if aRb means " a is the father of b ," aR/Rb will mean " a is the grandfather (father of the father of) b ," and so on. On the analogy of algebraic "products," we can write R/R as R^2 .

III. Distance. The exponents of our relational symbols, such as R and S , are indices to the number of intervening vertical or horizontal terms between the terms they relate. For example, aR^3b would mean that b lies in the third column from a , (so that if R is "father of" a is great-grandfather of b). Ancestors become more "remote" as the number of intervening terms increases; explanations or definitions likewise are "far-fetched" if the symbolic distances involved are large. In the dimension R , aR^3b locates b at a distance of 3 from a , aS^3b would locate b a distance of 3 from a in the S dimension.

IV. Direction. Any of several conventions may be used to indicate "direction." Geometrically, the simplest rule is to think of this as given by letting R and S distances be the sides of a right triangle, and the angle of the hypotenuse give the direction of the line. Or

we could define the "slope" of a line as the ratio of R to S distance, so that aR/S^2b locates b in the direction 1 2.

V. Extension of the Theory. This way of beginning a formalization presently makes possible the combination of matrices from physics—dealing with relations of distance, direction, time, and action—and the present symbolic matrices under a more general mathematical theory bringing out details of common pattern.

The present comments are intended to show how such a formal analysis of "dialectical" method can be grounded in a few basic concepts, and how a Platonic or diagram-oriented approach actually does use mathematical techniques to clarify concrete situations by abstracting their structures.

THE FIELD OF KNOWLEDGE

By examining the field of knowledge, we will at the same time discern what kinds of things there are to be known and what kinds of statement there are in which knowledge can be expressed. Different degrees of clarity and reliability are involved in different senses of "knowing." If we have knowledge of several kinds, there must be several kinds of things to know. Suppose we take two simple examples to illustrate four different degrees of "clarity" or "certainty" that appear in ordinary actions and thoughts. The reader should notice carefully that in the next several pages of discussion, the "anatomizing" of thought is not being repeated, as was done in the previous chapter. Instead, there will be "synthesizing," not "differentiating," the operations of "knowing," by finding a single meaning proper to the term, which different acts called "knowledge" approach more or less clearly and adequately. In the "organic" approach, as we pointed out, the same word used in different sciences has a different meaning each time, and one could not interchange senses of "high" to describe altitude and "high" to describe living cost any more than one could expect heart and liver to exchange functions and structures in an animal. In the present field approach, on the other hand, the same word has a basic single sense; there is

a field of meaning around this central sense, and different usages are explained by seeing where they fall in reference to a common center. There is, therefore, only a difference in degree or distance, not a basic separation of kind, between words as they appear in proof, persuasion, and poetry. This orientation of language suggests that the separation of theoretical, practical, and technical frames of reference typical of the organic point of view will no longer be a sharp one. One way to think of this loss of sharpness is to remember that *within any given individual organism* the anatomist cannot make his distinctions completely sharp. If, then, the whole world is conceived as a single organized pattern in a single field, or, as some philosophers have described it, as "a living animal composed of living animals," there will be no sharp lines of demarcation *between* individuals, just as for the student of zoology there can be no understanding of an isolated organ apart from its organic context in a living animal.

Proceeding to explore the meaning of "knowing," we find a first level on which we say we "know" something when we have some sort of hearsay information. For example, you may say you "know" that there is a way to adjust the temperature of a refrigerator simply because you have heard that its temperature can be adjusted. "Knowing" something to be true because we have "read it in a newspaper" is another instance of such "hearsay" knowledge. A clearer and more certain level of "knowing" is involved when firsthand experience is our basis for saying we "know." In this second sense, let us assume that we see relations clearly enough in these "experiences" so that "knowing" equals "knowing how." For instance, if you have seen a serviceman adjust the temperature of the refrigerator by turning a setscrew, you "know" that it can be adjusted, because you know how to adjust it you have a "technique" that "works" to get the result wanted. (Admittedly, in this case the amount of skill required is very slight; but the difference is only one of degree between knowing how to turn a setscrew and knowing how to operate an electronic calculating machine.) For many purposes, to know how

something works is quite sufficient; so, indeed, may hearsay be, if the source of information is responsible; but there are also other degrees of knowledge. A technique in itself does not explain *why* things work as they do; and it is based on a limited view of the situation, so that it cannot be adapted to radical changes caused by some shift in a broader context. Imagine an old refrigerator that gets too warm to keep food. At first, having heard that there is some way to adjust the temperature, but not knowing how, you call a serviceman. Watching him, you see that he turns a little screw a half-turn to the right, and the refrigerator grows colder. The next day it is too warm again, but this time, you yourself have the technique needed to adjust the temperature. "It gets colder," you reason, "because I turn that screw." But presently the day comes when the refrigerator is too warm again but the screw will turn no farther. Then you find you don't know enough to work out the new technique which this change in the situation requires. You may now reconsider the belief that previous experiments had confirmed so well, that "it became colder because the setscrew was turned." Peering at compressor, tubes, motor, and other parts, you try to see how that set-screw functioned in the context of the whole system. In effect, you look for "hypotheses"—for abstract plans or blueprints of mechanical systems that will explain why your previous technique worked, why it failed later, and what tactics will work now. You are trying to "get the whole picture," to integrate the parts of the machine. Of the theories you devise, at last one will work. You then have some evidence for thinking that you "know" how the thing is put together. In looking through the various structures that a blueprint or a diagram might show, you will note that two classes of patterns were discarded: (1) those which would involve mechanical impossibilities in this particular case—for instance, gas will not flow *toward* higher pressure; (2) those which would not serve the *function* of a refrigerator—though a certain plan would have complete mechanical consistency, and fit what you see very well, still if it did not operate to produce low temperatures, you would at once discard

it, as not being the structure *of a refrigerator*. Here, then, we find two other senses in which "knowledge" is used: first, referring to theories; second, referring to tested theories.

The example of the refrigerator does not bring out as clearly as might be desired the differences between this attempt to see a pattern as a whole—in the light of some function that gives it intelligibility—and the engineer's approach to the same problem, where the parts are isolated and their action is traced item by item. But a simple example from arithmetic will help clarify this difference, and show more clearly what is meant by recognizing a "structure" or a "pattern" explaining technique and experience. I once overheard someone say that if you write a number,² then reverse the order of digits (as 12, 21) the difference of these is always a multiple of 9. I did not "know" this before, nor did I "know" it with any certainty after having heard it; but I knew that someone had said it, and so started experimenting, to see whether my own experience in manipulating numbers agreed with the statement. As the reader can determine, every result in a set of tests with two-digit numbers was a multiple of 9. This made me *believe* or *expect* that further experiments would give a similar result. But this experimental knowledge still could not be considered very clear or certain; I did not see *why* the numbers "behaved" that way, and this meant that I did not see that it was necessary that they would so behave in cases I had not tested. Since the proposition was about *all numbers*, it was evident that there would be no hope of proving this property true experimentally except by considering every possible case. The next step was to decide *why* the rule worked. (As a matter of fact, this is a bookkeeper's rule for testing whether a discrepancy between two totals results from copying a number with two of its digits reversed. In this application, it is another instance of a technique that works in ordinary situations.) To discover why this worked it was necessary to find some general pattern common to every case of subtraction of numbers with reversed digits. Since in our positional

² "I" in this chapter is Professor Brumbaugh

notation a number with the digits a and b , written ab , means a tens plus b units (if we write 1 and 2 as 12, the 1 in the tens position = 1×10 , the 2 = 2×1 , the whole number = $10 + 2$), changing a from the tens to the units position subtracts $10a$ and adds $1a$ to the original number. Moving b from units to tens adds $10b$, subtracts $1b$. The result is therefore a change in the original number when we transpose both digits, equal to $9b - 9a$. Since the difference of two multiples of 9 is itself a multiple of 9, and the difference of the original and the transposed sets of digits is a difference of $9a$ and $9b$, we now see why the rule holds. We also see, having grasped the general pattern common to all particular cases, that the rule must hold for every case; we shall never run across a particular set of digits that proves a surprising exception (as the refrigerator setscrew was a surprising exception, when it wouldn't turn, to the rule used for a week very successfully).

This insight into a general structure differs in certainty from a mere record of experiments, however many there are. For example, if I could set up a device that selected numbers by chance with an equal chance of getting any given number, however large, and then tested the numbers selected to see whether those which were prime were also odd, I would very likely be able to find an infinite number of favorable cases, because the chance would be infinitely small that my device would happen to select the number 2, the sole case where this relation of odd and prime fails to hold.

In order to have the greatest possible clarity in understanding the behavior of the numbers discussed, one would need to examine the notions of "difference between" and "multiple of," which I simply took from memorized subtraction and multiplication tables in my calculation. If I could clearly define and explain the notion of number and show that it requires the definitions and tables I used to multiply and subtract, I would feel that I really saw clearly why the behavior of instances was what it was. This final stage is like the step in which I saw why the idea of a "refrigerator" required one of the mechanisms I had postulated to be the real or right one.

Now, unlike the discussion of the anatomy of thought in the preceding chapter, the present "synthetic" approach leads us to say that all the acts called "knowledge" are the same in kind—in each case, there is a certain insight into a pattern—but that they differ in certainty, depending both on the clarity with which we "see" and the size of the pattern seen. (Looking at the whole motor instead of just the setscrew in the refrigerator, for example, involves locating the "pattern" of the screw in the larger blueprint of the whole machine.) Mathematics is the tool with which to guide this search for stable pattern, though knowledge can go beyond simple mathematical description.

It is when we understand things most clearly that we see what they "really" are, as opposed to how they "appear." Taken in connection with the role of mathematics as an aid in this seeing, the result is at first an unexpected one. For mathematics has to do with patterns that are outside of history, and do not change. The mathematician's imagination is oriented toward the "diagram." A diagram of a triangle, for example, is a concrete instance of the "real" or "mathematical" triangle that is studied in geometry; your picture is not "really" a triangle, but is a guide in seeing what the mathematical triangle you are studying is like—provided you can discriminate between the properties the diagram has *because* it is triangular and other properties (its color and size, for instance) that it has *because* it is a concrete instance of the form triangle. The mathematical triangle is certainly "real" in the sense in which we call a thing real when it (1) stays unchanged and stable and (2) can be observed by other persons and discussed with them to our mutual agreement. These are two of the three tests of "reality" included in our usual meaning of the term: (1) something that dissipates or vanishes very quickly tends to be thought of as less real than something that persists longer and changes more slowly, and (2) something "in the public domain"—that is, something other observers see and report as we do—is considered more real than a thing that some observers do, others do not, see. Thus if you claim to see a

ghost in the corner, but no one else in the room with you sees it, you decide it was not "a real" ghost. If you saw an *instantaneous* collision and explosion, you would not be sure "what really happened." On both these grounds, a number or a figure is more real than ordinary phenomena and objects; it stays unchanged, and with instruction in geometry all observers see the same properties in it. The structure, rather than the instance, is "more real" in these senses. On the other hand, a third common-sense test of reality is that a "real" thing has some definite location in space and time; and in this sense, it is the particular diagram or instance that is "more real;" it is the "triangle" of which it is an instance that is less so.

Another way of describing the mathematical triangle, as distinguished from a picture or a diagram that is triangular, is as "an ideal" triangle. This usage is perhaps clearer when we speak, for example, of "an ideal" lever in physics. The "ideal" triangle or lever has only those properties which are essential to its identity: thus an ideal triangle has three sides, but no color; an ideal lever has perfect rigidity, and so on.

The discussion of degrees of certainty in knowing that have just been traced seems to lead to the following conclusions that the forms or the patterns of things are what explain their appearance and behavior; that the particular case is understood by seeing in it the general pattern; that the pattern is in two senses more real than the instance or the picture; and therefore, insofar as the pattern is an "ideal," *that the ideal and the real are the same.*

The process of clarifying knowledge by which we discover this identity of ideal and real is throughout *evaluative*. On each level, we look for some single technique, hypothesis, or tested theory that is better than the alternatives we can discover. Such a "better" explanation shows us a unity in what was before a multiplicity, as the mathematical analysis of subtracting reversed digits gave a unity to the multiple experiments and numbers. It increases certainty and clarity, and answers questions as to "why." Naturally, there must be some highest point in this scale of explanation if we are not to

be confronted by perpetual uncertainty. Such a highest point should serve as explanation for the entire fields of fact, action, language, and thought, because there are no sharp differences preventing these from forming a single organized whole. In fact, the highest point is knowledge of "the form of the good," which is the standard by which all other knowledge is evaluated. Without some awareness of this form, reflected in mathematics, technology, and art, we could never learn or know, because we could not identify any one possibility as "better" than another, nor could we see any unity in things. Not only is knowledge oriented to this basic form, but nature must be also, for it is those theories which our reason accepts as "best" that prove to correspond most closely with the way things are. This is not surprising, for the same forms are present in the mind and in nature, of which mind is a part. Neither is it surprising that we cannot explain what "the form of the good" is by finding some more general form or organizing principle that contains it as a part, for this form orders knowledge and nature as wholes. We must come to know it by analogy from instances, and by thinking through the contradictions that would result if there were not such an ordering principle. This form supplies the final explanation of the identity that we have discovered between the real and the ideal.

Plato offered his readers a very famous diagram, "the divided line," which summarizes the four levels of knowledge that we have been discussing. Perhaps because he wants his reader to see both the similarities and the differences of these levels, he attributes incompatible geometrical properties to the diagram, so that *the* divided line is at least two figures, both signifying the same set of relations and things.

As given here the terms are set up as a matrix, with the segments of the central line equal; this does not match either of Plato's versions, though it is a perfectly legitimate Platonic way to summarize the discussion in this section. Plato's own diagram was to have all the segments unequal, representing relative clarity of knowledge by respective length (presumably the length was to stand for distance

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between the knowledge and the reality known); but it was also to have its segments in proportion, so that Reality—Appearance; Knowledge—Opinion; Reason—Understanding; Belief—Conjecture; Forms—Structures; Experience—Hearsay evidence, would be a single continued proportion illustrating the similar relations of the levels in the figure. The figure cannot meet both conditions if it is a single figure, for the continued ratio can only be illustrated if the two middle segments are equal. The reader must therefore, in looking at our matrix diagram, remember that the relations in space of higher and lower segments have to correspond to the relations of things in a field where they are neither wholly separate nor wholly identified, so that between any two both a relation of sameness and one of otherness applies. In the following section it will be shown why we must not think of “forms” as having spatial or temporal location, as we might be tempted to do by the present diagram.

KIND OF KNOWLEDGE		THINGS KNOWN	
	Form of the Good		
REALITY	Reason	Forms	KNOWLEDGE
	Understanding	Structures	
APPEARANCE	Belief	Experience (techniques)	OPINION
	Conjecture	Hearsay evidence (shadows, pictures, etc.)	

THE FIELD OF NATURE

The most famous, and most controversial, statement of our conclusion regarding the identity of ideal and real is the “theory of ideas” or “theory of forms” central in the philosophy of Plato. The foregoing discussion of clarity of “knowledge” of different kinds is a summary of an argument Plato himself used to explain and establish his theory. Care must be taken not to make certain very easy errors in interpretation. “Ideals” or “ideas,” for example, suggest

thoughts existing only in human (or other) minds; for that reason, "forms" is a better English term for the concept being discussed. It is the better term because it comes closer to expressing the fact that when we discuss the number 2, a triangle, or justice, what we are talking about is not our subjective idea or concept of these things. There is a discernible difference in your thought when you are thinking about your concept of a triangle and when you are thinking about a triangle. This difference would not exist if "forms" themselves were concepts rather than the objective things to which concepts refer. Further, while concepts are private property, the forms are public; they can be seen by everyone, and we can agree about their nature. It is in an equally objective sense that we speak of the forms as "ideals": each can be seen clearly as a whole, with no obscurities or deviations to mask its nature.

We can establish this more clearly if we use dialectic in a negative way, and consider what the consequent meaning of reality and knowledge would be if the forms *were not* given this objective interpretation.

While on the one hand we must guard against locating "forms" exclusively in thought, on the other hand we must guard against misunderstanding their nature as things. When the form is said to be "more real" than the particular instance, "more real" does not mean more visible and tangible, or more determinate in *location*. In that sense, the forms, as distinguished from instances embodying them, are not "real," for they have no location at all. This is possible for us to conceive intellectually but not to visualize; and the theory of forms has been repeatedly misstated through trying to visualize forms as *located* somewhere. One tradition insists that the forms are located "outside of" space and time, "beyond the visible heavens." That makes it impossible to answer Aristotle's question, "What on earth have these forms to do with sensible things?" for if the form is in one place but the thing in another, we cannot envisage the form as constituting the "real thing" illustrated by an individual sensible instance or diagram. If the "form of the square root of 2"

is located beyond the borders of the finite space-time world in which you live, what can its relation be to the line of the diagonal in a square you draw? The pictured square is here, the real square (and real length of diagonal compared to side) "yonder," the two are different in kind and there are no traces of transmitted action connecting some supercelestial place with your diagram right here; the whole "picture" is wrong somehow, and it is wrong because there is something involved in the meaning of a diagram that cannot be literally *pictured*. This interpretation has naturally been given to the "theory of forms" by philosophers oriented toward an "organism" point of view; if the form is "real," and the notion of a separate individual organism underlies the zoologist's concept of "reality," he naturally thinks that this means the form exists as a "substance," a separate individual. The theory that forms really are separate substances has found defenders, but even these have had to admit that we can't understand how such a situation is possible, and that no "evidence" for this view can be found that will seem relevant to the zoologist or the engineer.

It is not much better to try to state the relation of form and instance by locating the form *inside* the individual instance—for example, as an attenuated physical part. In that case, there remains no objective form by virtue of which we judge two particulars to be instances of the same pattern; for this common pattern, being in two separate places, loses its unity. If, for example, you draw two squares on paper, and say that the form "square" is *in* each of them, either (1) the form has been divided and a "part" is in each, or (2) there are *two* forms of square. The former alternative is not intelligible, because the "parts" of squares considered simply as figures, shapes, or ratios in space are not themselves squares if we divide them into two. The second alternative looks all right until someone says, "Yes, but you call both these forms 'squares' because there is a common third form, in which they share; now tell me, what is the relation of this *common* squareness to the two particular squarenesses in these two little squares?" Evidently, as becomes clear if you

try to answer the question, you must say that this third form is "contained in" each of the other two. But is it shared equally, so that it is divided in half? Or is the form *entirely* in both? In this case, may we ask about the fourth form common to the two instances of this third?

To escape from these difficulties, we might try to retain the notion of form and still grant it location by reconsidering the feasibility of locating the forms "in" a mind. The mind in question may be thought to be the mind of God, or the mind of a human observer. Yet this alternative again leads into a dilemma. Either our notion of "in" has lost its connotations of location, or the "form" in a mind has been separated from the form in a sensible thing, so that there is no form in things, but only in our thoughts about them. Or if things have such forms in them, then "All things have mind, and think," to quote Plato's objection to this interpretation of his view.

The consequences of our hypotheses that the forms are *in* space, the mind, or things lead us to see that these forms must be objective and eternal things of which our concrete diagrams "remind" us.

If this solution is to be accepted, however, we must explain the fact that disagreements between people occur frequently. We can explain this by distinguishing, as was done in the previous section of this chapter, between different degrees of clarity in intellectual vision. If this is in fact the explanation, we can test it by seeing whether discussion and education among honest, energetic inquirers and students will lead to final agreement. It should do so if the explanation is a correct one. (The reader may be interested in seeing the appraisal of the result of past discussion and education in the field of philosophy, presented in the section on Method of Chapter 7, below.)

Turning to the notion of the form as an "ideal," we see the relevance of the distinction just made, for such a form as "justice" may be seen unclearly and in a very limited sense by some persons, more exactly and generally by others. This does not mean that there are two "ideals" or "forms" of justice, one for each person, but that there

can be degrees of completeness in our knowledge of what the nature of "justice" is.

Moving from the pattern to the concrete diagram or copy, located in time and space, we find ourselves confronted with two problems in explaining the nature of such "location." Usually, "place" or "locus" suggests the imaginative picture of a set of separate little boxes, so related that things in one "place" are irrelevant to those in another except when they push and bump them. Such pushes or bumps are not enough to enable the thing hit to tell much about the object that hit it, since all that the two share is an impact. (If you suddenly run into something in an unfamiliar room in the dark, the bump alone doesn't tell you what it is you have hit.) However, we claim that our minds can discern patterns (or at least instances of patterns) in an outer physical world. Further, we claim that the parts of an animal, a society, a person, are responsive to the state of the whole—that patterns are all organically connected in space. Yet a "whole" certainly doesn't operate by "impact" on its separate parts.

The trouble comes, says the Platonic philosopher, from noticing only one of two properties that "space" really has, and of using a wrong, one-sided picture of "location." It is true enough that distance serves as an insulator—if you put enough space between yourself and a bear, he can't eat you. But space also serves as a conductor; things don't have sharp, neatly defined edges, but act through a whole region. Thus the table that is near enough for you to see but too far away to touch is still acting on your sense of sight; the stars still exert a gravitational pull on you, though a very small one. Anything coming within the field of action of something else will be acted on by it, usually more intensely as the distance between the two grows less. Space pulls things into patterns of mutual action, like a conductor, as well as serving to hold them apart. The neat picture of boxes left out this "conductivity" of space; if you doubt its existence, consider how a person changes as he moves from one social situation to another. The influence of a new "place," or a new "context" of other people, may make corresponding changes in him. To

include this connecting, pulling-together aspect as well as that of separation, we have to regard each thing as located throughout the region in which it acts; no neat box closes off center from periphery in this region. The "exact location" of a thing is the hypothetical point at the center of this region of action (of course such a "point at the center" is not a separate physical entity).

But "exact location" is a confusing notion; that of "effective" or "modal" location is more helpful. Things can separate or stand between one another. They can also be effectively present to one another over a wide area. In so far as things are effectively present to one another, they must share at least one common form, a form that characterizes or limits the field that contains the two things. Without such a sharing of form, there would be no togetherness of things in space and no interaction of things upon one another. In terms of *this* concept of location, it is not a real paradox to say that two things can be in the same place at the same time.

Now you can answer the objection that all you know are thoughts taking place *inside* your body, so that there is no ground for your thinking these relevant to an *outside* world of fact. This sharp distinction of a field of experience inside the observer and a field of events outside him again introduces the inexact picture of nature as a set of boxes, perfectly insulated except when one actually bumps into another. You are aware of colors and shapes situated outside of you; they give you a sense of a distance that results from their coming from other centers; but they are parts of the outer world of things themselves, connected to your experience because you are aware of them as also present "in" your mind (via their action on your body).

Failure to see things in nature as wholes, to look beyond some narrow box of specialization, is a common error. For example, your earlier notion (as a "technician") that refrigerator adjustment involved nothing more than the neatly boxed technique of turning the little setscrew, was such a mistaken oversimplification. Admittedly, this "separate-box" way of looking at things is simple, and seems at

first to be "practical." But on second thought, this practicality is seen to mean only that it is simpler to ignore outside influences when we are dealing with specially insulated regions; too narrow a training will leave the technician unable to handle the demands of new situations, and too literal a notion of space as a homogeneous insulator will be utterly incredible when we confront it with the facts of concrete experience.

In the field of nature, space and time simultaneously hold things apart and fuse them together; the technical term for this, which Whitehead introduced, is to say things are "located modally," where "modal" is opposed to both the extremes of "simple" and of "diffuse" location. We ourselves, insofar as we are natural, share this modality of location. As a result, we can also be aware of things other than our own subjective ideas and can participate in the future through present actions and choices.

The existence of "modality" provides the basic answer to the problem of the sensitivity of parts to the states of wholes. For what is involved here is a specially sensitive relation between the whole and its transmitted aspect in each part. If we think of several different centers of location, with circles of influence spreading out from each, we can say that *within* wholes conductivity is greater from place to place than it is *between* wholes generally. This is about what the philosopher using the notion of organism would say, except that here we feel sure that there are all degrees of tightness of organization, on a sliding scale, rather than any sharp demarcation between animate or organic and other kinds of being.

What has been said about the field in which patterns appear can be summed up, as it has been historically, in the "law of continuity." This law asserts that there are no breaks or sudden discontinuities in the natural order; it amounts to extending the notion of "modality" that was used above for places and times to all the various properties we encounter in nature. If, for example, a large region of nature can be subdivided into parts, so can a small one; if the world is harmoniously organized on the scale of size we ordinarily

observe, so is it on the scale of the galaxy or the microscopic particle. Also, properties do not suddenly vanish, but fade away with gradual decrease in intensity. If intelligence appears as a property of human beings then we must think that something analogous but far less vivid (a kind of blind desire, perhaps) is present to a slight degree in electrons and stars. This law follows from the character of the field of nature.

But we must also remember that nothing is without some determinate pattern which constitutes its real and permanent identity: this notion appears in what can be called the "law of harmony." This law follows from the relation of the pattern to nature, which requires that there be some differentiation of wholes and parts in the continuous field.

The interaction of these two laws leads to the "laws of history," which frame the constantly recurring patterns that are projected into space and time and there are joined together. We must go to experience to determine exactly what these patterns of process are; but the principles of continuity and harmony, if they hold, guarantee that there will be laws of history to be found experimentally.

The word "history" in this context is a puzzling one, for on the one hand we think of "laws of process" as mechanics, but on the other "history" suggests events bound up with some kind of rational agency. But the present philosophy would think the word well chosen, since if electrons still have some adumbrated desire or perception, the rules of their behavior have still some of the nature of "history" as we apply the term to human affairs; and since it is only on the analogy of our own thought and action that we can imagine or conceive how field and pattern are brought together, we must think that these small particles and their adventures have a place in the creative plan of some agency shaping the course of the cosmos as a whole, an agency whose work we can trace in writing a kind of cosmic history.

Modern physics and astronomy provide many suggestions for the Platonist who wishes to become a good historian by comparing

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the extreme cases of the evolving universe on the one hand, and the spinning, stable electron on the other.

In its operation, the world spreads before us as a theater of action; and in this aspect we consider it as we carry our philosophical synthesis from the fields of thought and nature to the field of the practical.

THE FIELD OF ACTION

Within the world of history, we carry on our careers; what we can do is circumscribed on the one hand by the law of harmony, on the other by the law of continuity, but between these extremes man, like other organisms in the world, retains initiative; and he knows his actions to be free.

It will not surprise the reader to find this section treating the nature of human choices as a selection among patterns in the "field of the practical"; that is, within the context of society and our location in it. Naturally, some of the basic properties of this domain are those of the field of nature as a whole, since our bodies and communities are immersed in the flowing pattern and influence of the physical cosmic order. This fact should be understood, however, not on the analogy of extending observations of physics to society, as the atomic theory seeks to do, but rather as discovering the nature of societies and extending this insight to physics.

It may, however, surprise the reader to find that the resulting philosophy of practical life revolves around man's idea of immortality and his desire to achieve it. This desire may be interpreted as our seeking to possess or to achieve more than a passing reality—in other words, to earn a place in an enduring order of things, that is, to be real.

Our practical decisions concerning personal development, life in communities, and so on, involve acting within a theater that is a part of the physical field. The nature of the world in which we live is reflected in the nature of our own choices and careers. We are immersed in currents of force resulting from the patterned flow

of larger structures in space and time; our culture, our family, the weather, our need for food and shelter, our sense of physical pain and pleasure, all reflect this fact of immersion in streams of events far larger than our own self-contained careers. There is both a latent pattern and an interference between patterns to be found in our experience, because we live in space and time.

In this perspective, the problem of happiness is basically one of knowledge. On the one hand, if a man allows himself to be guided entirely by past habits and by present pressures of his environment, he renounces any claim to freedom, and approaches a life of "passive" routine, wholly predictable and lacking in any dignity. But even if we hold a determinate pattern before our imaginations, and try to become like it, this act of engagement will not make us happy unless the pattern is the right one. A usual fallacy in practical affairs, as in theories, is to assume oneself to be complete and isolated apart from other people and nature. This leads to the identification of happiness with a fictitious pattern of an isolated career. For example, all selfishness is based on an erroneous and unreasonable conviction that we ourselves are more important in society or nature than other persons. Two of the functions of education are to teach us to look beyond immediate feelings in making decisions, and to see ourselves in a proper social and cosmic perspective before we make a choice.

Evils result from confusion of means with ends or of parts with wholes in our view of the practical realm. Thus the man who, like all of us, wants a good life, but believes that either wealth or security will automatically bring him what he seeks, is the victim of an ends-means confusion; the man who believes that his own desire for power is the only important thing in the universe is guilty of a part-whole confusion.

Human beings are in a peculiar, ambiguous position in the world. On the one hand, as animals we experience pleasure and pain, and desire *self-preservation*, on the other hand, as rational we contemplate unchanging forms, and desire *immortality* while knowing

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that individual, physical immortality is unattainable. If we consider simply the mechanisms that we can discover at work in our physiology, we seem to have no freedom; but such mechanisms cannot, anywhere in nature, explain the influence of a whole on its parts. If we consider simply the selfsame, eternal character of patterns, we seem to have no freedom, either; in choosing a certain role to play, we are committed to all the details of that role. But when we consider the interaction of ideals and history which is the real theater of action, we find that what we choose makes a difference in what happens, that we are actually free within limits, and that we are not entirely condemned to frustration in our love of immortality.

Balanced as we are between eternity and change, all human beings have a love or a desire for "something," just as all have some "knowledge"; but what it is that we want may be known either more or less clearly. There are thus degrees of clarity of love, parallel with levels of adequacy of knowledge. It is possible to make survival, prestige, or comfort and pleasant sensation an object of affection. As we discover if we think about it, such an exclusive attention is a confusion of what we really want with things that are sometimes no more than means to the desired end. In the case of comfort, for example, what life is less disturbed by pain than that of an oyster, yet what man would want to live it? And evidently, either long life or great power can be accompanied by discontent, pain, and frustration; we don't want to survive just for the sake of surviving, but for something more.

It is hard to see clearly in the face of strong immediate distraction; surely every one of us has felt at some time that the sole and sufficient condition for a happy life would be freedom from the dentist or from our creditors. It is also very hard to imagine clearly something never suggested before. Thus a tribesman may fail to grasp the idea of a life that involves no hunting; the writing of tribal history would be very difficult to envisage for a hunting tribe with no tribal poets or historians. Culture and education thus make

clarity as to basic desires and needs more or less easy to attain. But it is never easy to know exactly what we want most.

If fundamentally the human situation is, as has been suggested, one of desiring an immortality that we know we as individuals cannot reach, then we must see whether there is *any* sense in which we can attain this desire. Evidently, leaving children behind us whom we love, and who carry on human life, gives us a kind of participation in an immortality of our species; it is "succession, which is the counterpart for things that change of eternity." Also, the fields of space and time stretching beyond us to far horizons are, like the farm and the sea, theaters of action, by shaping history, we can attain a kind of historical immortality, contributing to a future that we shall not see realized. But much is forgotten, and nothing is more quickly forgotten than a purely self-centered career; history is quite ready to forget, even to ignore, such a career, and its traces are obliterated. (In literature, this often is expressed by an image of engulfment at the end of a tragic story. Melville's *Moby-Dick* affords an excellent example, and so, in its own way, does Flaubert's *Madame Bovary*.) Even so, such immortality is more than a mere figure of speech if we take seriously the diffuse location of events in space and time. In a way, we *belong* to the future that we never experience and that may ignore us.

A third kind of immortality comes through knowledge. Insofar as in contemplation and study we give our whole attention to the basic patterns or laws of nature, which do not change, we see ourselves and the world "under the aspect of eternity." In a way, we come to be at home with the enduring nature of things. "The philosopher," says Plato, "is a spectator of all time and all existence." Viewing the world as a godlike being would do as he overcomes the limitations of a partial perspective affords a third sort of participation in immortality. (Thornton Wilder's play *Our Town* embodies a similar idea. In the last act of the play, where the dead talk together in the town cemetery, they still are aware of the basic forces of nature—the winds and the tide—but the more limited

feelings of the *living visitors* to the cemetery puzzle them.) So far as this vision that extends beyond our individual careers becomes part of our "selves," we rise above the limitations of transitory individuals, "souls that endure for a day."

This discussion of immortality (which the reader will realize would be dismissed as poetry, not accepted as philosophy, by a thinker oriented toward the notion of "model" or "specimen") is basic to understanding the "practical field." For the world as a theater of action is a world marked out and seen in the light of desire. The problem of happiness presents us with the major question of knowing what we really want, and knowing how to get it. And the whole question of why we want anything, or love anything, involves us in a consideration of immortality.

On the physical level, love is a feeling of identity with other human beings, and a desire that "by the law of succession" children like ourselves will continue to exist. Such love involves a transfer of affection from our own immediate appetites and wants, from the radical self-centeredness of a baby, to a more mature insight. Philosophers since ancient times have recognized that this transfer is sometimes not made, or is incompletely made—a phenomenon of basic importance in contemporary clinical psychology.

A second object of desire is to project ourselves into the larger fields of history. We want to do something that other people will admire and remember. We want ourselves to become a part of the future. Sometimes this wish is expressed by building monuments of stone, with our names inscribed on them (compare Shelley's "Ozymandias"). Sometimes it takes the form of trying to gain so much political or military power that the dictator or conqueror can feel that he controls the collective energies of a whole community, which he can direct toward breaking down the barriers between his own life span and the future. This latter notion is an illusion based on a confused apprehension of the difference between direction, control, and power. It is the patterns in the field of history that have value and stability, not intensities of pure force without creative

value. It is not the dictator who is remembered with respect but the legislator who shapes the institutions by means of which our co-operative existence is carried on, or the artist and the inventor who add to the vividness of our awareness and possible individual freedom.

The third satisfaction of our desire for immortality comes insofar as we see that the world and man are instances of eternal patterns, and that we ourselves insofar as we become like these forms have transcended some of the limits of individual existence. Dignity and freedom come from acting on the basis of reason and principle, from a basic sense of value and justice, not from following appetite and interest blindly, though the most desirable human life is a balanced one, in which a good man will participate as parent, citizen, and moral individual.

Justice and Pleasure

Various theories have been advanced to explain why men associate in communities. Society provides physical security, an easier way to meet economic needs, and opportunity for education and recreation. While any one of these aspects could be set up as its basic function, the three are so closely related that one comes nearest to the facts of human behavior by adopting a theory that treats them all as important and necessary functions of society. The "state" is made up of individuals, and its functions meet their needs, but the members of a social community are so interdependent in their activities that it seems perfectly reasonable to treat the state itself as a kind of "organism" or "living animal." The basic functions—nutrition, self-preservation, planned adaptation—are the same for animal and community; the structural patterns (channels of communication in the state, nerve paths in the individual, for example) are basically similar, and the state *as a whole* acts on the characters and the careers of its parts in such a way that "human nature" is, at least in large part, shaped by the whole culture.

For many centuries, this analogy of the organism and the state

has been discussed in social and political theory. On the one hand, a doctor or a biologist will insist that a mere aggregate of physically separate and self-contained organisms is *not* an animal. The "state" has no "organs of digestion" except in the distributive sense that its several citizens, separately, have them. But, the biologists could say that, on this basis, surely we could just as well call the forested regions in the Ozarks "an animal," because there too the region "has organs of digestion" in the sense that every individual bobcat or squirrel has them. (To be sure, contemporary studies of ecology actually modify the strictly "organic" point of view toward a "field" approach, and some of them might almost treat this region in the way dismissed as absurd by the hostile critic of our "social-organism" theory.)

In defense of the analogy, we could answer the criticism by saying that it is the pattern that is the distinctive feature of an organism. The biologist's further requirement, that the parts of a real individual must be connected and function together in space and time, is always met by patterns in space-time fields, because these fields establish physical integration among all events located in them. The biologist, we recall, sometimes stated his requirement that an organism must have an intelligible pattern with the added qualification that such a pattern be intelligible considered apart from any broader context; the philosopher oriented toward the diagram will insist that such structures are never found in nature, because every part of the field of process is acting on and causally connected with every other.

"Justice" is the word used to describe the proper or best relation of whole and part within society. Historically, theorists accepting the notion that society is a "whole" or an "organism" have often been in danger of putting "the good of the whole" ahead of the welfare of any of its several parts. If this is done consistently, "justice" will mean whatever course of action seems expedient to most members of the community, and individual "rights" can have no importance or even existence as against the claims of the "state." But any or-

ganization which is to function well must support its parts while it is working. A clock in which the motion of the pendulum breaks teeth from a gear, or an animal in which any muscular effort puts a lethal strain on the circulatory system, is not "well organized." In the same way, if each individual has his proper social function, the state may not crush or deform him mentally or physically, or the community as a whole will lose its tone or temper and invite revolution. Viewed in this way, "justice" means not only a proper subordination of the part to the whole, but a proper adjustment of the whole to preserve each part.

Is it possible for such an adjustment to be made, or will the needs of a large community always force some individuals into roles destructive of their health, or intelligence, or dignity? Granting the necessity for specialization of functions in society, can we plausibly say that every citizen is entitled to pursue his own happiness, yet in such a way that his several pursuits somehow coincide with the public good? Can a merit system with equal opportunity for all to compete and with appropriate rewards for success in different sorts of competition (for scientific skill, use of a laboratory; for managerial skill, high income) lead to an order where each person attains full development as an individual while making his maximum contribution to the community? Plato, who thought that these questions provided criteria by which to judge the excellence of Greek city-states, also thought that no very close approach to a real community embodying such an ideal could be made within the limits set by existing social fact. Today we have resources of power, production, and institutions of education as new facts, and what seemed to Plato the pattern of "a city existing only in words, not to be found on earth" has now come much closer to realization. At any rate, the possibility of its realization need hardly be considered a Utopian dream.

CONCLUSION

The reader will have noted the very sharp differences between the present notion of a diagram (or field) and the atomic theory. In the growth of science throughout the modern period, these two systems of explanation have enjoyed alternate successes; at the moment, field approaches are displacing the atomistic concepts that were dominant in the science of the past century. The interaction of theories based on these antithetical concepts is a study in the interaction of a priori schemes. The field approach, committed to a speculative, synthetic method, has scored its triumphs by working with increasingly larger physical fields, which beyond a certain size have properties that the current atomic theory cannot explain. The atomic theory has repeatedly developed alternative explanations by postulating, and giving experimental evidence for the existence of, smaller elementary particles than had previously been identified; and models built from them have exhibited the properties observed in the larger fields. The reader particularly interested in a generalization of the field approach to natural phenomena will appreciate the diagrams and discussion of "tilted" time systems in A. N. Whitehead's book, *The Concept of Nature*.

Not only does the "diagram" notion run counter to the "model"-oriented, but it is opposed to the "specimen"-oriented philosophy as well. Where the latter treats separate, concrete individuality as the most basic characteristic of nature, the field theorist asserts that there is no real separation, but a single continuum. Where the philosopher working in terms of the notion of the specimen finds his difficulties in setting up literal terms and in avoiding emotional or poetic intrusions, the philosopher oriented to the diagram notion has the opposite difficulties. he must avoid any literal doctrine that takes some single whole as explaining everything, and must also avoid treating analogies too literally. The basic continuity of the field concept must be supplemented by some way of discriminating distance and difference without invoking sharp, literal distinctions.

The atomic and specimen philosophies each encounter the problem of whether elements or organizations are things, thoughts, or words, and this question divides each of them into three alternative positions; but diagram theories differ in emphasis rather than in kind. One can, however, distinguish a number of variations on the theme of field and pattern.

At the limiting extremes, it has been said above that total emphasis on either field or pattern as alone real will destroy the applicability of this philosophy to experience. To anticipate the discussion of creativity in the following chapter, note that the Platonist criticizes such a position as giving an unbalanced, almost exclusive, emphasis to the field. How, he will ask, if a creative process is always unique and its outcome partly unpredictable, can we gain any certain knowledge of things? Certainly, he agrees, there is such a thing as creative intuition, but in art and invention such intuition expresses itself as the *recognition* of pre-existent structures, not as any *creation* of new ones. Intelligence, responding sensitively to the mirroring of eternal forms in concrete process, often sees reflected patterns that have not been noticed before. But such sensitivity cannot be self-critical, as science can, and cannot give reasons, as philosophy can. The artist does not reason dialectically, and his works of art frequently give false values an impact and an appeal they ought not to exert. This happens whenever one form is inadequately seen, but is integrated into a poetic expression where it combines with more adequate representation of other forms. For instance, Achilles may seem an admirable character, whom we wish to emulate, because Homer embellishes his story with metrical, onomatopoeic, and dramatic patterns of great beauty. Yet without the "enchantment" of these, Achilles would be seen as undisciplined, selfish, irascible, petty, and not at all a person of the sort one can sincerely admire. The artist believes in a realm of infinite "possibility"; we may agree, yet point out that what gives possible futures their infinity is that the changing flow of process can intro-

duce infinite distortions into its reflection of any given form. At the end of his *Republic*, Plato gives us a myth in which souls stand before a showcase, choosing their next lives. The showcase contains all the various roles or careers that represent possible historical imitations of the form of man. It is not the soul of the poet, guided by the glitter of appearance, who chooses wisely, but that of the philosopher able to compare these projections to the single common form that is the reality beyond.

This emphasis on the field is an extreme, but in interpretations that preserve a closer balance, there still is room for difference within the Platonic tradition of philosophy. Such difference sometimes consists in trying to distinguish fewer than four levels of clarity of knowledge, with their associated four aspects of reality. If we accept a basic "diagram" orientation, but then argue that the only real distinction is that between hearsay and technique, so that all clear knowing should be equated with "knowing how," we get one modification, which the reader may recognize as pragmatism or operationalism. If we accept three levels, but not the fourth, holding that there is an objectivity of structure but not of value, and that there may be many alternative blueprints of phenomena and technique, we have another sort of "Platonism," in which mathematical description replaces dialectic as the highest level of knowledge, and structure displaces form. This seems the point of view of much contemporary work with field theories in the natural sciences.

In addition to these variations, a Platonic philosopher may, as has been said, get a "fixed idea" that some single pattern or field is uniquely important, so that other fields and patterns need not be taken into account. For example, if we were to try to explain everything by taking a "culture" as a fixed natural whole and "knowledge" as one part, we might argue that all science and all knowledge are "culturally conditioned," or "caused by culture." But the subject matter of a field of knowledge such as mathematics is another whole with patterns relevant to the nature of knowledge

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and culture: it is not "cultural conditioning" that explains the incommensurability of the side and the diagonal of a square, but rather the nature of squares; cultural conditioning enters only as it supplies an incentive for noticing what the properties of squares are.

These variations do not hide the basic common stress on continuity and structured medium that are common to all forms of a diagram-oriented philosophy. Such a philosophy does justice to our sense of continuity in things, to our sense of insight when we see the significance of a reflected pattern, and to our desire for immortality. It may not do equal justice to the mechanisms at work in nature, nor to the importance of living individuals apart from their status as symbols and instances of unchanging intelligible patterns of structure and value.

Let us now proceed to a discussion of the fourth key notion that is a cardinal point on our compass of philosophy, and to the philosophy growing from the notion of "creation," as we see it, for example, in the making of a work of art.

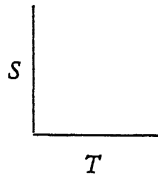
APPENDIX: GRAPHS, SPACE, AND TIME

In dealing with the field of things, we have been particularly interested in the basic philosophical question of the relation of forms and structures to space and time. Within the realm of nature, lying between pattern and field, modern physics has presented an excellent description of the patterns of space-time interaction, so that we begin with rather clear notions of the properties of nature which philosophy must explain.

The reader may be interested in noting that the idea of a "matrix" developed above is very like the idea of a "graph," and that by using such graphs we can diagram a constant law or form operating in the different moments of a continuous process of motion. Change is "explained" by finding in it an invariant structure or form; this procedure is one of the features of a "diagram" orientation that we will find most strongly criticized in the following chapter.

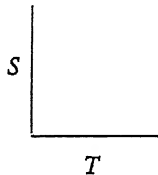
FORM AND FIELD

Suppose, for example, that we set up a co-ordinate framework of space and time as they form a field for a given observer:³

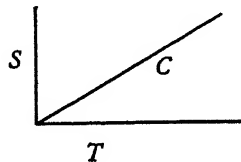


In this field, something is “at rest” when it remains in the same position while time passes; graphically, its space-time path is a line parallel to T . If it changes position, this means that it occupies different positions (S) at different times; its graph is a slanted line.

Evidently, it will be necessary to extend this diagram to include several observers, or standpoints of observation, rather than just one. Suppose you are moving away from me at a constant speed; then the items that seem “at rest” to you (for instance, if you are driving, the parts of your car and the people in it) seem “in motion” to me, and vice versa. We can picture this by first drawing my frame of reference:



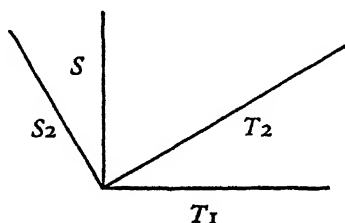
We now add a picture of the changing positions of your car, as I observe them.



³ The success of graphic methods in bringing together algebraic formulae and patterns in a spatial continuum rests on the inventions of analytic geometry by Descartes and of the calculus by Leibniz and Newton

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giving the line C , at an angle to T . Now any line parallel to C will seem at rest to you; I can picture *your* observations by letting C be the T -axis of your frame of reference, with an S -axis at right angles to it.



From such a basic diagram of two superimposed space and time co-ordinate systems, one can develop various laws of relation of frames of reference, and, with the addition of the concept of mass and force, laws of physics as well. The diagram itself is suggestive, in the way that the earliest astronomical model was, for we see at a glance that a unit of time may differ in length as measured on the T_1 and the T_2 time-axes of the figure, and a stretch of space may differ between the S_1 and S_2 axes. A little further thought indicates that two such frames inclined at an angle of 90° could not be given a sensible physical interpretation, because all the spatial units for one frame would fall in the same instant of time for the other, so that a given particle at rest in one frame would move through every position of the other frame of reference in an instant of time.

Such considerations led to the special and general theories of relativity, which among other achievements describe the relations of phenomena in frames of reference in motion relative to one another. These are the theories which have come to dominate theoretical physics, particularly astronomy and astrophysics, and have been instrumental in giving science its orientation in the twentieth century ⁴

⁴ See H. Margenau, *The Nature of Physical Reality*, A. Einstein, *The Meaning of Relativity*, A. N. Whitehead, *The Principle of Relativity*, *The Principles of Natural Knowledge*. Whitehead believed, apparently, that the theory could be developed by

FORM AND FIELD

The concepts of the graph and the frame of reference have been introduced here for several reasons. In the first place, they illustrate the diagram-oriented way of looking at motion in the fields of space and time as the development of static mathematical equations or fixed patterns. They thus illustrate the contemporary orientation of natural science, where change is viewed in this way. These concepts bring out visually some of the basic analogies between the graph and the verbal matrices discussed earlier in the chapter. They also show how the student of physics tries to arrive at "clear" knowledge of natural phenomena by appeal to mathematical hypotheses.

There is a possibility that the general theory of gravitation will eventually turn out to introduce an even greater scope and unity into our descriptions of the space-time field, particularly if in spite of its extreme generality some experimental tests can be devised and made.⁵

At the present time, the theory of relativity is still giving rise to controversy over its philosophical implications. Many scientists and some philosophers seem to hold that, since the only patterns we can discern in the field are those of individual frames of reference, such patterns alone are "meaningful" and real. This appears to be the unbalanced Platonism discussed above, which commits the fallacy of ignoring the field. For without some single common field in which they occur, there would be no way to compare or to identify or even to distinguish these patterns of "individual frames of reference" at all. It is as if the dialectician, noting that the intervals between lines on a page are only "blank space," and really "say nothing," insisted that a printed page would be fully meaningful if such intervening spaces were eliminated. But he would still carefully leave spaces between lines of the manuscript in which he

a very general deduction from the consideration that in every frame, there must be some differentiation of space and time (which the 90° tilt would violate) The reader is referred to the works cited above for his analysis and the diagrams to which it leads

⁵ Appendix II to the third edition of Einstein, *The Meaning of Relativity*, presents this general theory of gravitation

presented this insistence. The philosophers who are peculiarly concerned to point out this arbitrary treatment of some basic field are, naturally enough, mainly those who tend to attribute value and reality primarily to the field itself. These philosophers were criticized above for too much stress on the field, and not enough on the pattern

The reader will find sympathetic defense of the scientist's position in most current works on the philosophy of science; a sympathetic presentation of the position of the defenders of the primacy of "creation" in dynamic fields is undertaken in the following chapter.

»» CHAPTER 5 ««

Creative Becoming

THE IDEA OF CREATION

The ways of thought that appeal most to the mathematician, the engineer, or the naturalist are not necessarily those of the artist or of the art-lover. Art is not limited to the discovery and the exhibition of form. There is a real difference between the artist and the mathematician, even though some poets have contemplated the figures and propositions of geometry with an almost mystical awe. (Thus Wordsworth admired mathematics, and an American poet once exclaimed, "Euclid alone has looked on Beauty bare!")

Now it is true that many of us find the formal aspects of a work of art—say the metrical pattern and rhyme scheme of a poem—the easiest to describe and to remember. But we must admit that a picture or a poem is not constructed according to a formula or a definition, nor is its execution the solution of a problem well defined in advance. The work of art goes beyond the mathematical, in that it is something made or created rather than merely conceived. Euclid may indeed have looked upon beauty, but it was the barest form of beauty, lacking in the power and the significance of great art.

On the other hand, we cannot say that a poem or an essay is an "arrangement of words," although at least one poet who was also a great philosopher once thought so.

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*Quin etiam passim nostis in versibus ipsis
multa elementa vides multus communia verbis,
cum tamen inter se versus ac verba necessest
confitari et re et sonitu distare sonanti.
Tantum elementa queunt per mutatis ordine solo.*

Nay, thou beholdest in our verses here
Elements many, common to many words,
Albeit thou must confess each verse, each word
From one another differs both in sense
And ring of sound—so much the elements
Can bring about by change of order alone.

—Lucretius, *De Rerum Natura*, trans. by Ellery Leonard,
Everyman's Library, 1928, Bk. I, ll. 823-28

True, when we write or talk, we are putting words together in a certain order; however, our purpose is not to arrange words but to say something, to communicate or to clarify an idea or an emotion, and we do not limit ourselves to any given list of words—we may even coin new ones. Furthermore, we would, none of us, confuse genuine “composition” with that piecing together of elements performed by the British schoolboy who is required to reassemble in poetic form the words of a Latin verse that has been broken up into a prose sentence. Such an exercise calls for the solution of a puzzle, not the writing of a poem or the expression of an idea.

Again, despite what some may believe, a work of art is not, strictly speaking, a *specimen*; nor should it be compared, without careful qualification, to a living organism. The work of art takes shape as a center of human attention, and its growth is sustained by a series of decisions and commitments of which the artist is more or less clearly conscious. Nonetheless, there is something impulsive about the artist's work that invites what we might call a vitalistic analogy. Thus even so self-conscious a craftsman as the poet Robert Bridges could write as follows:

“Man's faculty of creation, rare in him and not at his command, is
but Nature herself, who danceth in her garden at the blossoming-time

'mong the flowers of her setting; and tho' true it be that Art needeth as full devotion and diligence in the performance as doth Virtue, yet i' the mind of the artist Nature's method surely is on this wise;—the Ideas which thru' the senses have found harborage, being come to Mortal conscience work-out of themselves their right co-ordinations and, creatively seeking expression, draw their natural imagery from the same sensuous forms whereby they found entrance; thus linking up with all the long tradition of Art.

The manner of this magic is purest in musick, but by the learner is seen more clearly in poetry, wherein each verbal symbol exposeth its idea; so that 'tis manifest by what promptings of thought the imaginativ landscape is built and composed, and how horizon'd: And the secret of a poem lieth in this intimat echo of the poet's life."

—*Testament of Beauty*, Oxford University Press, 1930, IV, ll. 974-93.

In the same poem Bridges refers to:

"...thatt swarming intelligence where life began, and where ideas wander at liberty to find their procreativ fellowship, thatt fluid sea in which all problems, spiritual or logical aesthetic mathematic or practic, resolve melting as icebergs launch'd on the warm ocean-stream: and wheresoe'er this corporat alchemy is at best 'tis call'd by all men GENIUS.
—*Ibid.*, ll. 816-23.

There is to be sure, a profound resemblance between artistic activity and the unconscious internal economy of a living thing as it grows toward maturity and maintains its vital integrity. But there is also a difference that will be made obvious in what follows. This difference centers upon the notion of freedom or creative choice.

Consider the structure of a poem. We find that the whole is pervaded by a metrical pattern in terms of which stressed and unstressed syllables can be related one to another in serial order. Further, we find in many poems a rhyme scheme through which we can predict the sound with which certain lines will terminate. We may proceed then to study the grammatical structure of the sentences and find again a scene of intricate order the forms of which are repeated elsewhere and which may be studied and classified at great length. *The poem is a center, a meeting place, so to speak, of several types*

of *orderly patterns*. And still we cannot explain the poem's origin, its creation, by reference to these patterns. While the poem was in composition, these patterns of order were not woven together into the poem's structure, nor did the author know just how they were to be reconciled until he had written the poem. The poem was *created*, not drawn together according to a complete plan. The poet had no archetype that he could copy. True, he wrote concerning some subject; but the beauty of his mistress or the glory of the hillside did not supply the words that were to describe them nor did it dictate the metrical sinuosities of the verse. The poet has only his own notion of what he wants to express, and his mind teems with his material. The words of his language with their manifold connotations, the metrical technique of his masters, and those vaguer things, the style, the mannerisms, or the methods with which he is sympathetic—from these must be fused together into actual artistic structure the work in project. The poet chooses the forms that are to be embodied in his verse. Composition is the fusion of these forms into the concrete product. This fusion, we shall find, has a set of laws all its own and presents for consideration a new metaphysics. For the growth of the poem does not obey a determinate scheme as does, for instance, the plotting of a curve on graph paper. The poem is a selective coming-together of various patterns, not obedience to one pattern alone.

The philosophy of creation suggests that many things which philosophers once chose to consider as enduring and established are really plastic, and even in the making. Philosophers have often looked to the figures of geometry as patterns from which to draw theories concerning the relation of the *order* of nature to the *things* of nature. Philosophers have frequently supposed that once the idiosyncracies of reality were grasped, all things and all events would seem to follow one upon another somewhat as the constant sum of the angles of a plane triangle follows its structure. With the appearance of the philosophy of creation, this attitude begins to disappear and the order of nature is no more interpreted as something so

dominant in the life of things. We no longer think that the events of nature follow from their antecedents with the same absolute necessity with which the properties of a circle follow from its definition. And if there is a God responsible for the existence and the growth of natural objects, he does not guide their course according to an immanent and complete plan. He does not see all times and all places following from his own nature or from the nature of the universe. His providence does not exhaust the future. Rather, as Bergson has it, creation must fashion its path as it advances; and so must a creative God.

Bergson would interpret life itself as creative process, both the life of the individual and the development of biological forms. There is in one respect a marked resemblance between life and creation. A living being, so long as it succeeds in preserving life, must conform throughout its development to some pattern of function that will maintain life. Its growth is not then a matter of manufacture, whose products will function only at the *end* of a period of construction. Arising from a living germ, developing as a living embryo and a living infant, the organism reminds one not of a piece of machinery in preparation but rather of an aesthetic production that preserves certain characteristics, analogous to the metrical and grammatical structure of a poem, throughout the whole period of its production or presentation, while in other respects its form and meaning are enriched. Such a comparison seems legitimate when we recall Bergson's occasional use of poetry and painting as examples of creative production. The point of such analogy lies in this. In aesthetic composition, concrete embodiment or expression must preserve a certain form throughout. This form is maintained through unforeseen circumstances and problems of expression, which every advance in composition sets before the artist. This is similar to vital function, which differs along with it from mechanical manufacture in that the latter attains its form only at the end of its development. Further manufacture removes its product from contingent circumstance. Life both in the individual and in the species

is not so removed, and it maintains its form through adaptation to such circumstances. Thus vital development seems less comparable to production according to a plan than to aesthetic production which proceeds from no more than a chosen topic or subject and a medium of expression, producing answers to its problems as they arise.

Bergson has said "To manufacture . . . is to work from the periphery to the centre, or, as the philosophers say, from the many to the one. Organization, on the contrary, works from the centre to the periphery" (*Creative Evolution*, p. 92). That is to say, it preserves its unity or vital structure throughout development (*Idem.*) See also *Ibid.*, p. 65.

It has been in terms of such a notion that certain recent thinkers, most notably Bergson and Whitehead, would interpret the productive processes of nature. If we consider Nature fashioning her creatures in such a way, making new life out of old materials, pursuing always a new course that is not a mere continuation of a plan already established, then we are creative evolutionists. The future appears, then, in its concrete structure free and unpredictable. Nature is free as an artist is free when he envisages a fresh creation and escapes from the treadmill of mere imitation and repetition. But here the theory of creation encounters difficulties. Are we to believe that the exquisite precision that our sciences seem to reveal in nature, the ever present articulation and ramification of structure, is in origin not a matter of orderly development according to uniform law, but a hit-or-miss affair in which much of the future is left to unpredictable growth or even chance uprising? The process of creation must be studied with care if we are to distinguish it from a surge of "happenstance" or dynamic confusion.

For the philosophy of creation, reality is concentrated in the present. This is because time "has been taken seriously" as the active substance of becoming. In a sense, both the past and the future are nonbeing. The past is concrete nonbeing, completely definite in detail, the object of history. The future is lacking in concrete actuality, being, insofar as it "is" at all, a set of possibilities awaiting em-

bodiment. But real time is the way in which future becomes past, the way in which open possibility attains concretion. To enjoy reality—to be actual—is to take definite form in the passage from possibility to concretion. This movement of embodiment is creation. That which has not been produced as the culmination of a passage of creation is not actual. Actuality holds patterns that once were mere possibilities in a close-knit "togetherness," the elements of which are in the closest form of reciprocal relation. As contrasted with this, possibilities are isolated, having "abrupt" boundaries. Thus when you say, "I may travel rapidly," you leave an abrupt limit to the picture. *How* you will travel, in what vehicle, and so on, remains unanswered and need not be answered to preserve a reasonable integrity of thought. However, if you say, "I am traveling rapidly," the question "*How* are you traveling?" becomes absolutely pertinent, for you must admit that you are traveling in some definite way and that your motion depends upon definite conditions, which will change when you cease to move. On the other hand, when you spoke only of the possibility of travel, no one of these conditions was necessarily involved. Creation is the passage of loose-knit abstraction into close-knit actuality.

To make the same point in a slightly different way, let us borrow an idea from Whitehead. Creation—or as he would call it, "creativity"—is the passage, omnipresent in physical nature, life, and mind, from *disjunction*, an open situation that can be described only in terms of "either . . . or . . ." to *conjunction*, a closed or fully determinate situation to be described in terms of this *and* that. Thus the open future of alternatives is resolved into the *concrete* togetherness of a historical situation. In our own life of practical decision we are constantly enduring or presiding over just such a process of *con-crescence* whereby alternatives resolve themselves into conjunctions and we behold the past taking irrevocable shape. The living world that interests us most lies on the frontier between disjunction and conjunction, between possibility and fact. As conscious beings we stand, although not perhaps as obviously as the creative artist, on

both sides of the dividing line. We "look before and after," cherish the past and anticipate or apprehend the future. We span the crisis of becoming.

Reality concentrates as present creation, set within an environment of past and future. Creation adds to the past, as it produces something that fits into the unfinished pattern to be found there. Creation reorients the future as it contributes a new actuality that offers or denies opportunity for embodiment to awaiting possibilities. Thus creation holds possibility and actuality in an ever shifting contact. This contact or intersection of past actuality and future possibility is the reality of both of them.

Despite what is widely supposed to be true, such process is not a leap in the total dark, or a sudden flash of supranatural inspiration. To be sure, we shall find that there is a contingency deeply rooted in all creation. The concrete outcome of a creative act cannot be anticipated. But even so, creation does not lie beyond the pale of explanation. Some thinkers of great prestige have attempted to describe creation as thus fundamentally closed to rational penetration and explanation; but their interpretations have been one-sided.

The student of living things may well urge that life is conditioned by a vast array of material and efficient causes. This the creative philosophy has no desire to deny. In fact, the creative philosophy realizes that according to its prime hypothesis this situation is to be expected, for creation does not proceed without a medium, nor does it violate the temporal continuity of nature. There is, in other words, no supernatural intervention that violates this continuity. No "principle of life" intervenes and mysteriously alters the structure of living beings. Every event, vital or otherwise, must be in coherent conformation with the past. Thus the empirical investigator will face no impossibility in searching for the inanimate conditions and even the inanimate elements of life. But this does not preclude the hypothesis that condition and element are the occasion and the medium through which creation is always at work.

If the reader wishes to perform a philosophical experiment of

his own, let him reflect upon his powers of conversation. This should serve as well as an example of artistic production, for, as Croce says, any form of expression is a form of art, however modest. Consider then our ordinary verbal self-expression. Its process may, if we follow in Aristotle's footsteps, be analyzed into four phases or "moments"; Aristotle would have said "causes." First, there is the medium of expression, the language we speak, the material out of which we fashion our statements. This is, however, not limited to vocabulary; there are as well grammatical structures and the conventional forms of expression or idiom that every language possesses. There is, further, to correspond with Aristotle's final cause, the idea to be expressed, the theme of our discussion, for the sake of which we undertake discourse. It is a platitude that communication or expression clarifies our thought and even actually develops it. Through discourse our ideas pass from a vague sort of generalization isolated from relevant considerations into a coherent and complete structure of their own.

But this does not exhaust our analysis. There is another phase to describe, a subtler point not easy to make manifest. This is Aristotle's formal cause, and it refers to plan of organization. It is the way in which we handle the material for the sake of the meaning. It is such form that individualizes a writer's work. After all, innumerable authors employ the same medium and many write on the same subject—it is form that sets them in contrast and makes criticism possible. In one sense, certainly the form *is* the work of art.

To complete our analysis of expression there must be mention of the efficient cause—the source of energy that keeps expression active. This is the will, the power of directed attention turned upon our subject matter, the power that promotes expression, or more precisely, makes expression possible, for this is not wholly a voluntary matter.

THE COMPASS OF PHILOSOPHY

ART AND CREATION

In the foregoing the nature of creative activity has been discussed. Now the same task will be undertaken with reference to the characteristics of the beautiful object insofar as these are present to the mind that enjoys it. It is perhaps needless to say that these two accounts must to some extent overlap, since they differ from one another primarily only in method of approach.

Consider as introduction two famous passages, one of which we have already mentioned:

All theory is gray, and green the golden tree of life
—Goethe

The meddling intellect
Misshapes the beauteous forms of things:
We murder to dissect.

—Wordsworth

To say that art is awareness of concrete actuality, and that it surpasses the limitations under which theory must labor, is a romantic platitude. Yet such a thesis seems easily controverted when we consider that so many aestheticians are willing to admit that artistic effect often depends upon illusion. Meredith's happy glimpse of a windy day—

.. lengthened ran the grasses—

is a case in point. Again the power of William Blake's drawing often lies in his bold distortion of the human body. That art surpasses science in accurate description of actual or concrete structure no one can soberly maintain.

We all know this, and still the romantic doctrine appeals to us. Wordsworth's famous statement seems somehow justified:

The Man of science seeks truth as a remote and unknown benefactor, he cherishes and loves it in his solitude: the Poet, singing a song in which all human beings join with him, rejoices in the presence of truth as our *visible friend and hourly companion* —Preface of 1800

Now in what sense is this true? Some will tell us that the doctrine can mean only that art stirs the emotions while theory leaves us unmoved. Yet the most commonplace account of misfortune may arouse sympathy without evoking any feeling of aesthetic intensity or immediacy; and on the other hand a powerful artistic treatment of the same theme may arouse in us less emotion, our interest being held by the purely aesthetic power of the image. For instance, when we read Housman's poem "Eight o'Clock," that brief epitome of an execution, we feel less oppressed and disturbed than when we read a detailed and commonplace account of a hanging; and yet Housman succeeds in embodying permanently and unforgettably an aspect of the scene, in fact almost its human essence, in a way no journalistic report can do, for he achieves real aesthetic immediacy.

Nor can we say that such an effect is attained by clever mention of certain sensuously perceived details. Too often do we find aesthetic immediacy in the "metaphysical" poets or in a phrase such as this of Robinson's:

. . . He had done well,
Wherefore he was a good and faithful servant.
God asked of him no more; and he would ask
No more of God than was already given.¹

Here sensuous embellishment is at a minimum. Yet the dialectic or contrapuntal contrast of opposites is in itself a form of aesthetic immediacy.

Aesthetic immediacy, which is for us synonymous with aesthetic excellence, does not depend upon the evocation of emotion or upon sensuous detail. It is a far subtler thing than either of these. In its own way the art product presents to us the same interpenetration of qualities and elements that comprises concrete actuality. True, the object of aesthetic vision is isolated from its environment, for it absorbs our full attention; but within its limits there is nothing

¹ Edwin Arlington Robinson, *Mathias at the Door* Macmillan, 1931, p. 4.

abrupt; it has no lacunae and no adjuncts. This property the aesthetic object shares with the "things" of sensuous perception, whose shape and qualities "belong" together and are so recognized, not upon reasoned argument, but upon the irresistible prompting of our consciousness. This recognized characteristic is known as "compresence"

In poetry, for instance, compresence is manifest in the fact that the several simultaneous phases of the verbal expression, specifically the rhythmical and onomatopoetic connotations and the more conventional significance of the words, contribute to the effect of the whole. Here the phases of the expression share in one another's presence, just as sensuous qualities seem to cohere in perception

Consider the lines from *Macbeth*

Duncan is in his grave;
After life's fitful fever he sleeps well.

Here the alliteration emphasizes the meaning of the words through "simultaneous repetition" of the "proposition" involved. The *f*'s and the *v* seem to trouble the progress of the second line, which is then softly released into the liquid peace of "he sleeps well." The inextricable togetherness of the two statements, linguistic and onomatopoetic, of the same theme constitutes the power of the expression, and gives reality to the image.

Again, consider the last lines of Keats's sonnet on a translation of Homer:

Or like stout Cortez when with eagle eyes
He stared at the Pacific—and all his men
Look'd at each other with a wild surmise—
Silent, upon a peak in Darien.

These lines form a unit owing to their position in the sonnet structure. This structure runs through them, requiring us to carry through to the end or face an aching void of incompleteness. Within this comparatively arbitrary unity, two ideas are expressed. Surprise and profound satisfaction, even contentment, are united in the emo-

tional characterization of a moment of great discovery. The two emotions are rendered compresent by their inseparable relation in the sonnet. This effect is supported by the fact that the two emotions are discovered as entertained together by Cortez and his men. But no mere statement to this effect will reproduce the feeling of compresence.

Upon reading and appreciating these lines, we are not aware of surprise *and* satisfaction, but of a fusion of the two. Without the benefit of artistic expression we could not be directly aware of their togetherness, save only perhaps at the moment of undergoing such an experience in "real" life, and even then the actual texture of such experience could be preserved only by exercise of our own powers of expression.

Consider in connection with this the importance of unity in design and the measures to which painters have recourse to preserve the recognizable unity of their compositions, without which compresence is impossible. Such concrete unity is involved in all aesthetic immediacy. In fact, aesthetic immediacy is the subjective form of our apprehension of compresence. Art reveals compresence not by asserting its existence discursively, as is being done in this discussion, but more directly by embodying meanings under the form of concrete interpenetration. Compresence is the most general characteristic of actual existence, certainly as general as space or time. Compresence can be thought; to think it is to contemplate the basal category of actuality. Also it can be perceived; to perceive the compresence of a given situation is to enjoy its beauty.

Discourse or theory is "gray" because in discursive thinking we lose sight of immediacy and compresence. Discourse is mediate in that it separates elements one from another and considers them severally. Thus it proceeds in "steps." Furthermore, discourse is "gray" because it never refers to any given concrete situation rather than to some other similar one. It thus describes a possible aspect of natural process without specifying any concrete environment in compresence with it. Irrationalists sometimes interpret this as a

serious defect of discursive thought. This is not a fair criticism. The very power of discourse lies in its breadth of application and in its explicit exhibition of articulate structure. Both of these would be lost if discourse were always aesthetic. There is, however, a danger for metaphysics in that philosophers sometimes describe the world as if it were a theory or a set of principles and not a concrete actuality.

Possibility, which is the proper object of discursive, conceptual thinking, is deficient in compresence; hence the justice of the term "aesthetic 'realization,'" to refer to that which overcomes conceptual limitations. Within a moment of compresence there is no floating possibility, but actuality of structure.

Of course in a work of art no such exhaustive factual explicitness need be presented: art is by no means limited to a superphotographic realism. Actual compresence is not *represented*, it is, as we have seen, *achieved* in the structure of the expression. We feel the compactness of the expression and recognize this compactness as a property of the object presented in the expression. Thus art surpasses theory by feeling the presence of actuality, which reasoning can never exhaustively describe or make manifest.

Let us consider once more the poetic examples of compresence already mentioned. We see that compresence cannot be apprehended as mere juxtaposition. The simultaneous propinquity of two statements does not necessarily produce their compresence. They must not only be united by a common structure of expression, but must also "belong" together in that they must refer to one object or objective situation. This object yields the dominant idea or theme that is expanded into compact presentation of its various aspects in a moment of expression possessing aesthetic value. In such an expression, the several statements "belong" to one another, as revealing aspects of the same situation. This fact "supports" the compresence of the statements which the artist works together. (When we enjoy natural beauty we often look at the things before us *as if* they were presented in expression.)

The fact that aesthetic compresence requires objective support shows us that those who believe in the possibility of a thoroughly unintelligible work of art have overstepped themselves. Without intelligibility of some sort we are without a dominant idea and hence can have no definite organization of material open to our apprehension. This does not mean, of course, that the work must yield its dominant theme at first glance.

In ordinary unaesthetic perception our awareness of compresence is not intensified, owing to the fact that the scene lacks the domination of any idea, and is split into many parts, each claiming attention. Compresence pervasive of the whole is hardly sensed at all. However, each separate element is a compresence of its several qualities, and the entire scene, insofar as it can be apprehended as one scene, possesses some pervasive characters. These characters may be grasped in mutual compresence and a work of art of "broad simplicity" produced in which detail is relatively unimportant.

One may insist that it is *only* when the features of a work of art or a natural object are seen as compresent that genuine aesthetic enjoyment is possible. In the sequel this thesis must be defended.

It is by no means always true that we *first* see the work of art as a proper aesthetic unit and *then* discriminate the elements. Often when we first make the acquaintance of a truly difficult work of art, say a painting by El Greco or Picasso, we are unaware of the compresence of its elements and are troubled by unusual color chords or by the nonrepresentative drawing. It is true that we may carry away from such a survey a "general impression," but this is not an impression of aesthetic compresence. We are not satisfied by a vague impression but must have, to quote William Blake, a vision of "minute particulars organized."

There is in El Greco's painting a powerful unity of effect. Consider the fusion of his line, which often distorts the human body, with the ethereal otherworldliness of his almost weightless figures. The line sweeps from one side of the canvas to another, thus establishing a superficial unity in itself; and the same curve that makes a saint's

body seem to float may pass through his facial expression and actually constitute the look of compassionate anguish or piety for which he is memorable. The parts of the picture and their meanings for the observer interpenetrate with one another so that the work of art is not composed of this element *and* that element but this element *with* and even *in* that other.

It is not necessary that we like the supernatural or the weird to enjoy El Greco. We may be atheists and still admire his work. It is not otherworldliness that we admire but this picture as the embodiment of otherworldliness. Even such description is too abstract; otherworldliness is not embodied as such but is compact with other elements, the remorse of a Peter, the grief of a Magdalen, or the tenderness of a Madonna.

Even so, one might inquire of our more enlightened critic: Why should an artist pursue compresence? In what respect is it more privileged than say, opulence of line, otherworldliness, or neoclassic coldness? Simply in this: We may dislike or disapprove of one of the characteristics just mentioned when we come upon it in "real" life and still thoroughly enjoy the work of art in which it appears. If we cannot do this, aesthetically speaking, we are vulgarians. On the other hand, no one is ever in a position to say honestly, "I dislike compresence in real life but I enjoy El Greco's treatment of it." Wherever we notice compresence, we recognize beauty whether we find it on a canvas, in a landscape, in a poem, or in the sky line of a city. This is not true of otherworldliness or of opulence of line. Thus the latter cannot be identified with beauty or with successful art, while the former seems to be inseparable from it.

In any unit of expression there is but one *aesthetic* value, the compresence of the elements. Those of us who like this or that aspect without feeling its unity with the whole have not grasped the aesthetic value of the work of art. It is true that we may be pleased, pained, or amused on any number of grounds while examining a picture or a poem. But we do not enjoy *the picture or the poem* in this way.

To be sure, if someone were to write a treatise upon the popularity of a certain work of art through the centuries, he would find its various aspects emphasized, perhaps one at a time. There are two reasons for this. In the first place, many people never free themselves from sentimental enjoyment, they never perceive power of embodiment but only recognize what it embodied and evaluate the latter on nonaesthetic grounds. In the second place, many people who do feel this power of expression find great difficulty in translating this experience into any critical terminology. Their taste may be subtle but inarticulate, and so they fall presently into the sort of criticism that contents itself with abstract labels. Thus they may say that they like Renoir for opulence of line without seeing that this account is incomplete. What they really like is the presentation of a full-line compact with other important elements "of which *vertu engendred*" is a *joie de vivre*, characteristic of Renoir, the healthy exuberance of a purely human life. This is morally quite the opposite of El Greco's mysticism. But we may perceive one value common to both, a compresence of elements or concentration of expression, and that is the essence of beauty.

The art product presents an *interpenetration* of qualities and elements. Within its limits there is nothing abrupt; it has, as has been made clear elsewhere, no lacunae and no adjuncts. This is *compresence*. In poetry compresence is manifest in the fact that the several simultaneous phases of the verbal expression, the onomatopoeic and the conventional linguistic significance and connotations of the words, contribute to the effect of the whole so that these phases of expression share in one another's presence. Consider Robert Bridges' famous lines:

Whither, O splendid ship, thy white sails crowding,
Leaning across the bosom of the urgent west—?

The last three words in the first line carry three stresses unrelieved by slack syllables. This follows upon a regular alternation of stressed and slack syllables in the first half of the line. Thus the rhythm car-

ries us forward into an area of pressure where stressed syllables crowd together, suiting their auditory surface to the sense of the words. The verse does "press forward" But it is not the realism that constitutes the beauty of the image. We could easily give a more detailed and "significant" picture of a ship. It is the compact togetherness, the "simultaneous repetition" of the directly linguistic and the onomatopoeic statements of the ship's motion that makes the lines so powerful, and indeed agreeable to many who would not enjoy a sea voyage. Such concentration of expression is a most spectacular form of compresence.

Today, while we are still all under fire from the positivists, it is certainly pertinent to inquire "How can a hypothesis such as that of aesthetic compresence be verified?" We may agree that the methods of verification differ from one study to another and that what is legitimate in one field must be forbidden elsewhere. We must refrain from the heavy-handed insistence that all verification take a form familiar to the chemist or the physicist. In aesthetics, our objects are states of mind and acts of attention, and these cannot be reduced to pointer readings.

Suppose you attempt by critical suasion to bring a friend of yours to appreciate El Greco. It is irrelevant to tell him that he should not dislike supernatural religion or that he ought to stifle his unfavorable reaction to the pictured distortion of the human body. But an alternative procedure is not unfruitful. You can indicate the way in which El Greco draws his elements together into his closely wrought economy. You can describe what El Greco was trying to do—what is for him vital and what merely incidental. Then you can leave your friend to come to terms with the paintings and with your account of their intent. You may then discover that he has forgotten his reasons for disliking the artist's work. In El Greco's composition, elongation of the human body supports compresence and hence is amply justified, and at last your friend's first scruples seem quite irrelevant.

Thus it is possible to "teach" appreciation of art, and with patience

to heal blindness born of prejudice, although such education is less widespread than it might be. That is because people sometimes dislike to admit that they have been wrong and because teachers are usually in a hurry and often tactless in pointing out nonaesthetic prejudice. But surely many of us are capable of distinguishing between our nonaesthetic enthusiasm and the enjoyment of beauty. Certainly this is easier in retrospect, when we may be able to admit that our enthusiasm for Orozco pretty well coincided in time with our left-wing politics, whereas our enjoyment of El Greco followed upon some understanding of his methods and a knowledge of what to look for in his pictures, knowledge that may have been derived, let us say, from the writings of Meier-Graefe or Sheldon Cheney, who have shown so many people how to "open" El Greco's compositions.

On the basis of the foregoing, it may be argued that we enjoy compresence in art as a symbol or a shadow of the concreteness that is often obscured by our concern for generalization or calculation at the expense of perception.

If we desired to express this doctrine in the form of a myth, we might invent a story running something as follows: When Prometheus freed man from superstition by giving him discursive reason and the weapons of analysis, the jealous gods exacted a penalty from the human soul. Although with much painful effort man may contemplate the eternal ideas, his mind, fashioned now into a new form by the very effort of reasoning, no longer fully enjoys or possesses the *here* and the *now* of the "real" world. So punished, man is ever vaguely reminiscent of his past when he was really "in" nature and not, as now, at a lonely distance from it, surrounded by his new discoveries, the eternal truths and the useful abstractions that he derives from them. Occasionally in lucid moments of aesthetic enjoyment, he clearly remembers his lost state and rejoices to recall it.

A philosophy of creation is concerned with our sense of the concrete. It cannot afford, however, to ignore the fact that we make

contact with abstractions and possibilities. Creation is, after all, as we have seen, a passage from disjunctive possibility toward conjunctive actuality or concretion.

CONSCIOUSNESS AND CREATIVE ACTIVITY

We often think of consciousness as existing in an environment composed wholly of actual events and enduring entities located in the compact realm of concrete reciprocity. But this limits the environment to its narrowest aspect. It describes mind as an entity flush with the tissue of eternal fact. And the alternatives and possibilities that mind contemplates are not part and parcel of the factual order. They lack local habitation and they are not interwoven with one another in space. Yet they constitute the open margins of being. To these margins belong the schematic structures referred to in the tentative hypotheses that every scientist must for a time entertain as he puts questions to nature. To these margins of being belong those loose and undetermined possibilities which constitute the present status of the future. Here belong the contingencies that men of action must always consider

These alternatives comprise an important part of the furniture of the universe. They have to be "taken into consideration" like other textures of objectivity. The fact that they are lacking in the full detail of concretion, that they are "open," is most important but it does not deprive them of their status as objects. Through them reality thrusts itself upon us just as it does through the actual entities, placed and dated in concrete contexts, or through the timeless objectivity of the Platonic forms. These schematic alternatives are themselves universals, since they may be actualized in more than one concrete context. It follows that possibility must not be considered as the pre-existence of a concrete entity.

But, we are told, consciousness exists. It is thought to be strictly *here* and *now*. To be sure, consciousness does claim to be in contact with sheer possibility and with contingent futurity. But this, we are told, is not the real state of affairs. On the contrary, such objects

exist before the mind as actual ideas that, in turn, *represent* the nonexistent objects in question. Mind, it is argued, remains in the concrete order.

It turns out, however, that this concept of representation is an illusive one. It is, in fact, outworn, and this was made amply clear some years ago by E. B. Holt in his *Concept of Consciousness*. The following passage summarizes Professor Holt's argument:

The logic of the situation is simply this, and to logic it is that we turn:—Nothing can represent a thing but that thing itself. And if anybody has ever assented to the representative theory of knowledge it is only because he has not examined the concept of representation. The theory plays altogether fast and loose with this concept. Typical and indisputable cases of representation are readily found. A photograph represents a landscape: a sample represents a web of cloth: a statesman represents a borough. But the photograph does not represent the landscape in all respects: it leaves out, for instance, the features of colour and size. The photograph of a distant mountain-top gives no clue to the size of the mountain. It represents the landscape in the one respect of contour, and does so by being in that one respect *identical* with the thing it represents. If with a perfectly just lens a photograph were taken of a carefully constructed ellipse, the photograph would have exactly the same shape, but not the same size, as the original. And the photograph does not represent the size: while that the two shapes are identical is proved, because the analytical equation for one will be found identical with that for the other. Only the constants which define the size will be different. The same is true *mutatis mutandis* for a photograph of any the most complicated object. In so far as it truly represents the object, it is just so far identical with it.—*Op. cit.*, pp. 142-43.

Holt's philosophy, although later repudiated by its author, contained no very sharp distinction between possibility and actuality. Both were drawn together within the notion of subsistence and both were labeled as objective. Holt was too concerned with overcoming the distinction between "objective" and "subjective" to labor the ontological division between "actual" and "possible." This is to be noticed especially when Holt writes of volition. A volition is interpreted as an immanent "law" that unifies and explains one's

action. Holt compares this law with that of the acceleration of falling bodies and so ignores all reference to an open future. But the authors see no reason why Holt's epistemological principle should not apply to the situation as it has been described. "Nothing can represent a thing except that thing itself." We might suppose that an image with a determinate concrete detail represents an unfinished and indeterminate possibility. But such an image cannot do this insofar as it is determinate and fully envisaged—insofar, in other words, as it is concrete. If an open possibility is recognized, it must be seen to be at least in one respect essentially different from any image that is presented in an existent flux of content. And this difference the mind must recognize without depending upon any actual representation. Hence possibilities as such must be directly present to consciousness without concrete intermediaries in the form of images. There can be no representative perception of possibility. This is not to argue that some imaginal content may not enter attention as it seeks to focus upon possibility. Such imagery may stand to the possibility finally envisaged only as the figure on a blackboard stands to the Platonic triangle.

This means that we must be directly aware of *unrealized* possibility or we cannot be aware of it at all. Consciousness does not *represent* contingent possibility to itself. Consciousness is surrounded by possibility, is in contact with it, and breathes its atmosphere.

The truth is that consciousness and concrete existence are incommensurable. It is easy to forget that consciousness, unlike most things of which we are aware, is a metaphysical amphibian. Until we learn that mind has to do as much with what is not as with what is, and that its immediate environment is composed very largely of what might have been and of what may never be, we may well be unable to distinguish consciousness from outward behavior. Taken by itself, outward behavior is part and parcel of the factual world interwoven with and conditioned by a concrete ensemble of determinate events. But behavior and consciousness are only tangential. As conscious beings, we are always looking before and after, and

we must continually be concerned with what is not. This concern has an actual seat in overt human behavior, but many of the elements that constitute its immediate environment are not actual and may never be so. Consciousness is essentially being's sensitivity to nonbeing, the response of what is to what is not.

Mind, when conceived in its full scope, is supraorganic, and what is more important, suprafactual. To hold this view, we must come to see that mind belongs to or qualifies not merely the organism or the personality that is said to think or to know, but the full situation in which the subject-object relation is maintained. Consciousness is centered in organism and it is, at least at first, directed almost wholly by the needs of the living being through whose eyes it sees the world. The term "centered" is used here because it is freer of philosophical connotations than most terms. We must avoid terminology which suggests that consciousness "belongs" wholly to the organism or is somehow enclosed within it. Consciousness enjoys an orientation in the universe that is by no means wholly confined to the areas of fact in which the sensitive organism is located. It reaches far beyond these, contemplating the very horizon of existence and glimpsing even the atmosphere of possibility, the indetermination that surrounds the concrete world, so that what might have been and what may be and what can never be may qualify what is.

In action, the sense of reality is the sense of efficacy. In action, we are aware of the way in which the cumulative surge of our efforts carries on into the immediate future and gives upon an ever widening spread of alternatives. The ingenuity and the creative power of mind arise from its ability to see the relevance of past achievement to these open possibilities. It is this that makes possible initiative and choice and autonomy. Mind does not create the alternative possibilities that have been mentioned. These are quite objective. What the mind does create is opportunity, which is produced when the relation of our present position to a possible future is clearly apprehended.

Mind is neither a mere onlooker nor an absolute creator of being. To describe it as the first is to deny the autonomy of mind, to describe it as the second is to deny the objectivity of nature. We must steer a middle course and describe mind as the meeting place of actual concretion with the vast reaches of extrafactual environment. Physical space and historical time constitute a compresence of actual entities and events with one another. Mind constitutes a compresence of the actual and the non-existent. The idea of an existent thing differs from that thing itself only because it involves the background of alternatives with which the thing has, so to speak, competed, and also the foreground of open and unfinished future. Space and time are modes of concrete unity. But through mind unity asserts itself in the most comprehensive form that it can achieve. Within the scope of such unity, the relevance of things remote in space and time appears as an important aspect of their existence, even perhaps as a condition of their development. Such a view stands as the extreme opposite of mechanism, where spatial and temporal relations are the dominant, if not the only, conditions.

It may seem much too presumptuous to argue that a finite human mind is the unity of the world or is even an incomplete aspect of that unity. There remains, however, the theory that every mind is a unity drawing its elements from a broad and diversified complex. Even here mind appears, in one light at least, as a unity of the world, for the situation it synthesizes has no sharply marked boundaries but appears continuous with a vast environment. Mind involves a togetherness not merely of images, but of objects, of concrete things and the events in which they participate, of unrealized possibilities, and of the predictable elements of the future. In fact, an idea is a mutual relevance of objects that may not be closely united in the orders of space or time. Hence the creative power of mind and hence also its frequent aberrations and its capacity for unintended and undiscovered nonsense. (As William James knew, muddleheadedness and genius are closely related.)

CREATIVE BECOMING

Hence also mind's critical power, most essential in all responsible thinking, theoretical or practical, whereby what exists or what has been done is brought before the tribunal of mind in contrasting relevance with those nonexistent things which might have existed, which we might have chosen to do, or which we may still choose to do. Herein lies all the freedom and the authority that mind needs to possess in order to make possible its own logical and moral autonomy. To describe this autonomy, it is not necessary to argue that mind creates its world out of nothing, but only that mind remains in contact with both the spatiotemporal order of things and the realm of alternatives and possibilities.

So conceived, mind is faced with objectivity that it must respect. But insofar as mind recognizes that this objectivity includes both possibilities and alternatives, it can establish its own autonomy. In exercising this autonomy, mind discriminates and chooses. In such activity mind has as its medium not only the physique of its organism but many details, actual and possible, that constitute its total environment. Mind, like life and even perhaps atomic structure, may be thought of as a mode of interrelation, of interplay, and of organization. But this analogy is not a perfect one. Mind is distinguished from other modes of interrelation not only because of its greater scope but also because it possesses a power of initiative that arises from its contact with unrealized possibility.

In conclusion, let us briefly examine this power of initiative. There is a widespread feeling, not wholly sentimental, that creative initiative is miraculous and inexplicable. Creative activity will always appear mysterious to those who try to explain it in terms of categories originally apprehended as resident in noncreative behavior. In the latter we find the "stimulus" operating as an efficient cause. This stimulus is a concrete event. On the other hand, in creative decision possibility itself appears in the role of efficient cause.

We must regard mind as a process in which the potential realizes or actualizes itself. It is the sort of process in which that which is to be

determines, in part, the course of its coming to be. Mind acts as it does because pressing in and through the present is a world that clamors to be born.²

To the able man the world is never mute.

As Professor Blanshard admits, this notion appears at first sight quite scandalous. How can what is not yet influence what is?

Possibility can be an efficient cause only when in contact with mind, which, so to speak, acts as a catalytic agent. It would certainly be more in line with tradition to speak of possibility as formal or final cause. But there is a moment when possibility, confronting attention, directs the latter toward a concrete situation, and this direction is the mainspring of conscious initiative. Thus possibility shares with mind the function of efficient cause.

Let us consider this further. Already in contact with a schematic, but objective, possibility, creative thought hovers over the surface of concrete being, as perceived or recalled. It seeks a combination of elements by which continuity can be established between what exists and what, through the mind itself, urgently demands existence. These points of contact are not ready-made and waiting. Things and events not usually seen in combination must be hit upon together. Here the mind reverses the principle of empiricism; "ideas" do not arise from "impressions." Impressions, involved as they are in actual situations, are noticed because of the ideas these situations offer to complete. Ideas, or schematic plans, demand such situations and seek them by a sort of logical tropism, a feeling for relevance, comparable to what William James called "sagacity." In this way, there are established all sorts of interconnections between what is and what may be.

This magnetism of relevance is distinct from the classical laws of association, and it is never wholly at the mercy of associations based upon the contingencies of past experience. Like implication, such relevance, at work in thinking, can carry us into ground almost

² Brand Blanshard "The Nature of Mind," *Journal of Philosophy*, XXXVIII (1941), 211. Italics in the original.

wholly unfamiliar and, for the time being, very poor in associative connections. If our attention always followed the line of least resistance and was always the docile handmaiden of association, the novel advances that so greatly increase the unity of relevance in our world would be out of the question.

But we must beware of thinking of mind as supranatural. To be sure, the discovery of opportunity is the mind's practical "conquest" of nature. But this conquest is, in reality, an enrichment or a perfection of the "conquered." Mind can bridge the lacunae in the organization of Nature, which, like a sort of blind necessity, keep her from completing herself. But if mind is not at home in its natural environment, if mind lacks a sense of objectivity and a respect for fact, it is at home nowhere; and then mind is impotent. Descartes, we remember, characterized the project of aviation as in no way contrary to nature; but he added that it would require the intelligence of an angel to accomplish such an undertaking. Creative intelligence had to synthesize the scattered potentialities, all resident in nature, upon which the modern heavier-than-air flying machine depends for its efficacy.

Even specific standards of value cannot be conceived wholly in isolation from natural process. Possibilities possess value for a given concrete situation when they offer to continue and to strengthen its already established tendencies, or, if the situation involves consciousness, to further the tendencies and undertakings already felt as urgent within the situation. The ultimate aim is always the furthering of these tendencies, and this includes freeing them from conflict, both internal and external. The transformation of conflict, in which tendencies thwart one another, into organization, where through tension they maintain and supplement one another, is always an advance in realization of value.

CREATION AND VALUE· THE GOOD AND THE BEAUTIFUL

To the artist and the poet, the most palpable value is that of beauty. Other values, especially moral values, seem somehow to be

subordinate to the beautiful. There is some truth in this point of view. Perhaps we should argue that beauty and moral goodness bear a subtle similarity to one another, a similarity that most of us fail to recognize. Let us then in the interests of clarification put the question: Can the term "beautiful" be employed in criticism not only of the arts, but also of moral actions and decisions? Can we, without completely disregarding the significance these words have acquired through centuries of intelligent usage, assert that the term "beautiful" and the term "good" have any common connotation?

Surely we must hesitate before answering in the affirmative; for when speaking *sub ratione boni*, we must, like Hamlet, insist that we "know not seems"; while, on the other hand, we cannot say that Wagner's music is better or worse than it sounds. In art the surface is everything.

Many moderns are ready to insist that beauty resides in appearance and thus the term "aesthetic semblance" becomes a useful and satisfying one. Plotinus and the Neo-Platonic philosophers seem to have been among the first to recognize semblance. By them it is interpreted as a radiance, the radiance of that which possesses reality or perfection in a rich measure. But for most of us semblance is no such mystical category. We use the term to indicate that the lover of beauty is not, to quote Kant, interested in the *existence* of the object represented by a work of art or, as in the case of natural beauty, interested in whether or not the beautiful object really possesses the characters that seem to shine forth from it. We look for brilliant appearance, but we are willing to see it isolated from the rest of the world. The picture frame and the pedestal remind us that beauty belongs to a realm, sharply isolated, where things are what they seem, or where seeming and being are identical; and we may feel, as Keats has taught, that this is all we need to know.

Thus artistic semblance is intensified beyond theoretical or practical needs; it is a semblance where a meaning, an effect, is brilliantly reflected from the several facets that the work of art offers to the observer. This highly wrought expression might be character-

ized as an "athletics" of the spirit, where performance is carried to a high and difficult pitch to satisfy no end save that of a full and unimpeded activity of apprehension. Here certainly the beautiful cannot be identified with the representation of the good. For artistic enjoyment is enjoyment of the structure of semblance and not of the object represented.

No writer has argued more vigorously for this autonomy of aesthetic semblance than Kant himself—and still it is he who assures us that beauty is "a symbol of morality." By this statement Kant means that we judge the internal structure of beauty according to a pattern similar to that we employ in judgments concerning moral character (*Critique of Judgment*, Part I, Sec. 59). And he is right; moral responsibility and aesthetic excellence are structural analogues. They both embody freedom, wherein decision follows no habitual routine or necessity, where, in scholastic phrase, passion is replaced by genuine activity. The good man is no slave of impulse or of convention, nor is the good artist an irresponsible individualist or merely the docile follower of the tenets of a school.

Kant goes even further than this when he tells us that judgment, the organ of taste, and conscience, the practical or the moral faculty, are "mutually and mysteriously interwoven."

Artistic freedom is freedom with limited responsibility. It is bounded by the conventions of semblance and we do not look beyond them if we would maintain an aesthetic attitude. We are concerned with the surface of things—we expect the artist to prepare an exhibit. He is working, albeit honestly, for the sake of appearances. But appearance does not, if we may borrow the technical phrase from Descartes and his followers, "exist in itself." It rides, like quality, upon support. In this case the support is largely a matter of convention, the conventions of the arts whereby life and reality, in the broadest sense, are reflected. But there are times when we demand substance. We seek something firmer than aesthetic appearance, something that need ask no quarter of the spectator, possessing value, as it does, without special reference to any par-

ticular perspective or avenue of semblance. Now the question we must consider: Is substantial freedom substantial beauty? Or, better: Do we apprehend moral responsibility aesthetically, perceiving a kind of beauty which differs from the beauty of art only in that it is not meant for exhibition and is not isolated from its environment by the framelike conventions of semblance?

Perhaps portrayal of moral character in the drama offers us a crucial instance. Recall Plato's suspicion of the art of mimicry. In Plato's eyes, the stage is likely to corrupt the actor. The facile imitator must remain an "actor" and forfeit his status as an "agent." Hence Plato would not include participation in the dramatic arts as part of an ideal education for leadership. This is founded largely, presumably, upon a deep-seated suspicion of the man who is willing to combine moral subject matter with sheer semblance. And, probably, Plato is in part right: The actor so often cannot stop acting when he is off the stage. What may be beautiful within the limits of aesthetic semblance, honestly proclaimed by the conventions of the theater, becomes intolerable in real life when appearance becomes sham, except perhaps to those few tolerant sophisticates who take for granted that many actors are always acting, and judge them accordingly. And for these, indeed, all the world is a stage. This dictum, touched as it is by the cynicism of the *raisonneur*, is really the metropolitan sophisticate's translation of Keats's "Beauty is Truth." All such attitudes require the application of artistic categories to judgments upon practical life, judgments that we should otherwise call moral.

Upon the basis of this opposition, many people would, and with some show of reason, insist upon a sharp dualism between the moral and the aesthetic. Now there is no doubt that ethical judgments are not judgments concerning art, but it does not follow that moral judgments cannot be aesthetic, or in some way concerned with beauty. In fact, when we praise or blame a moral agent's decision, we recognize him as being akin to the artist—but as an artist with a

very special type of medium at his disposal, in terms of which he is responsible.

Substantial freedom, or genuine moral action, has a medium of its own, and this is not the medium of the arts—even of dramatic art; it is, in fact, far less docile or plastic; for moral decisions, unlike the decisions of the artist, cannot be sharply bounded in the extent of their application. Except in very primitive cultures or in highly nationalist circles, no such limitation is explicitly recognized.

Responsibility is a key concept both for substantial freedom and for freedom in semblance. The successful critic may be said to reveal the conscience of an artist by answering the questions that the artist's responsibility has rendered answerable, in terms of the structure peculiar to his work. When no answer can be offered,—that is, when we cannot after long acquaintance tell why in order to heighten what effect proper to the work as a whole, this or that line is drawn, we must admit that the artist was irresponsible, proceeding by momentary caprice or automatic habit.

The analogy with moral decision would be universally obvious were it not for the fact that many of us would rather compare moral decision to that of the technician and would prefer the engineer to the artist as an analogue. This is an unfortunate comparison. The engineer faces a specific task and considers means to the achievement of a well-defined end. As regards any one project he can formulate a very definite goal to which the means at his command may be subordinated. Neither the artist nor the moral agent can do this: the means must all too frequently be recognized as ends in themselves. Minor characters in a novel must be considered for their own aesthetic clarity, and morally we must all recognize the humanity of the people whom our plans involve. A phrase of moral activity is, like a novel or a symphony, a realm of ends—except that it is also a kingdom of ends composed of responsible subjects, co-operation between whom requires a highly sensitive self-control, where means and end must often be fused into one.

Perhaps this position can be clarified by a brief analysis of what

is meant here by "moral responsibility." A motive is an unilluminated desire, or better, desire in isolation from its possible relation to the whole self. An intention is illuminated motive. But it may arise from more than one cause, and the emergence of an intention often follows upon a tense and agonizing conflict, for the satisfaction of one motive may thwart other desires. The intention is the act of illumination with which the agent passes into overt action. A person is responsible—in this sense, which is not the usual legal one—when his intention brings the relevant motives into contact with the actual situation and its implied future, so that the intention becomes the individual's mature desire, even when it involves the denial of other desires recognized as incompatible with it.

Lack of responsibility takes two forms. The first, and morally the most significant, type of irresponsibility arises from rationalization. The second type may be called a sudden loss of presence of mind. Its most easily recognized form is the sudden yielding to physical cowardice. Any flinching before spectacular danger, a weakness that drives our coolly made plans from our minds, is an example of sudden irresponsibility. A sudden yielding to the temptation to boast or to "enlarge upon" a story we are telling may also be an instance, as indeed may a sudden succumbing to any temptation. Such loss of presence of mind differs from rationalization in that there is no intellectual struggle. Often the senses and desire lend a sudden power to one motive, attention is held by an object thus presented, and action follows. So in the arts elements of merely sentimental importance may be emphasized at the expense of sound composition.

The phenomenon of rationalization is too well known to any introspective person to require much introduction. It is a confusion of motives due to the fact that illumination is withheld from the situation by the overwhelming presence of one or more dominant motives. All rationalization is essentially hasty thinking, even if the struggle exhausts a long period of time. "Hasty" decision is opposed, not to "slow" but to "deliberate" decision, and rationalization is hasty

because inspection stops before everything has been observed. This phenomenon may repeat itself indefinitely in slightly varying forms and thus counterfeit conscientious and mature consideration.

Now apparently irresponsibility, like bad art, is never deliberate, for we cannot deliberately ignore any motive. If you consider the demands of a motive deliberately, you, so to speak, give it a hearing; and if you say that you do not want to give it a hearing, you are facing only the merest shadow of the motive that has lost its appeal, its cherished ends being somehow made to seem irrelevant. Thus the decision or the intention of a victim of rationalization is isolated from the relevant motives. Lack of responsibility splits the soul into fragments.

Moral freedom, then, is the full compresence of motives in the act of decision—the internal reconciliation of the self. It is a matter of “full presence of mind.” If motives are denied, at least they have not been ignored; and our internal freedom is preserved even in the face of external necessity. This gives the same rich concrete unity that we look for on the painter’s canvas—no group of figures falls without the pattern; there is no fissure in the composition, and no adjunct. Nothing has been left to itself; every element has been caught up in the sweep of the composition as it is in a group by El Greco. It is this compact actuality that we seek in art, since it surpasses the floating or disjointed structure of mere experience, and the skeletal patterns of discursive theory where full interconnections cannot be seen *totum simul*. And it is this compresence that we enjoy in contemplating substantial freedom when we recognize that our friend acts with full presence of mind and is, so to speak, “all there.” Here in moral responsibility is a compresence that has come to life and maintains itself without the support of a more or less arbitrary semblance. Here is a revelation of a *causa sui*—self-maintained but finite autonomy or responsibility, at home in a world that it has not created and that it cannot, save in a small way, alter or refashion. We are now aware of the significance of Kant’s statement that (artistic) beauty is the symbol of morality. This does not mean

that we enjoy responsibility because it reminds us of morality or vice versa, but rather that they both embody the same value, each in a setting of its own, one of semblance, the other of human life taken, so to speak, *in situ*, free from the artificial limits of the prepared exhibit.

How do we recognize responsibility in another? Hardly by an external empirical test. Even a martyr may not be a saint, and this even despite his conviction of his own sincerity. He may be too ready to become a martyr, too eagerly confusing sacrifice with a supreme exhibition of self-assertion.

The last temptation is the greatest treason:
To do the right deed for the wrong reason.¹

But again, like Mr. Eliot's Thomas à Becket, he may see his martyrdom as a spectacle of compelling power, the only instrument whereby his mission may be accomplished.

We often talk of sympathetic insight into character, but we do not always recognize that this and this alone is moral judgment and that it is aesthetic in essence. Strictly speaking, we do not *understand* a moral decision. We do not, in important crises, classify and then praise or condemn. If we approve, we either participate in the agent's decision by sympathetic repetition of its evaluation—and this is clearly akin to aesthetic appreciation, where to enjoy is to re-create—or we respect it as something that we may later truly appreciate, as when we are baffled by a difficult canvas of, say, Picasso.

In either case, we are seeking insight. We are trying to grasp that pervading unity or dominion of interpretation without which, in the one case the picture does not exist as an aesthetic object or in the other, our friend is not a fully responsible being. In the latter case, we are looking for the unity of selfhood. Nothing is then more ugly than to come, let us say, upon an isolated humanitarian gesture, a profession of good will toward the underprivileged made by a

¹ T. S. Eliot, *Murder in the Cathedral*, Harcourt, Brace, 1935, p. 44

pseudo-philanthropist who is clearly unwilling to pay the price that realization of such an ideal would require.

The moral freedom we apprehend is a characteristic of actions or decisions and not of personality as a whole. The good man is one who tends toward free acts of decision. Thus we may respect a friend for the free decision by aesthetic participation. So also in aesthetic criticism—we admire Shakespeare because we enjoy *Hamlet*. The aesthetic responsibility that makes *Hamlet* a supreme play is immanent in a series of decisions, originally Shakespeare's, and now, in a measure, ours as we enter the work of art. To appreciate the moral responsibility of an action we must participate in its decision in the same way. To approve is to reaffirm and so to coincide with the agent. As Goethe said, "to enjoy is to re-create."

Aside from the matter of semblance, we may see no essential difference between aesthetic participation, whereby we enter the mind of the artist and find his decision or selection good, and moral approval, whereby we reaffirm a certain action as the realization of a group of motives, and recognize the clarity with which these motives have been present one to another.

From the dramatic point of view, where we confine ourselves to the enjoyment of some semblance, genuine substantial freedom often appears at a disadvantage, deliberation sometimes being slow and cumbersome and lacking in the art of gesture. As Schiller teaches, the good man may often lack outward—we are tempted to say superficial—grace

Romantic thinkers have been on the whole too eager to judge morality as if it were an art, just as Plato in his Puritan mood was too eager to judge art as if it were morality. Plato saw clearly enough that moral action is beautiful—although throughout he tended to interpret beauty in too rationalist a fashion—but this led him to his unhappy attitude toward aesthetic semblance, so emphatically manifest in the third book of the *Republic*.

"This then, Adeimantus, is the point we must keep in view, do we wish our guardians to be good mimics or not? Or is this also a conse-

quence of what we said before, that each one could practise well only one pursuit and not many, but if he attempted the latter, dabbling in many things, he would fail of distinction in all?" "Of course it is" "And does not the same rule hold for imitation, that the same man is not able to imitate many things well as he can one?" "No, he is not." "Still less, then, will he be able to combine the practice of any worthy pursuit with the imitation of many things and the quality of a mimic; since, unless I mistake, the same men cannot practise well at once even the two forms of imitation that appear most nearly akin, as the writing of tragedy and comedy? Did you not just now call these two imitations?" "I did, and you are right in saying that the same men are not able to succeed in both, nor yet to be at once good rhapsodists and actors" "True But neither can the same men be actors for tragedies and comedies—and all these are imitations, are they not?" "Yes, imitations." "And to still smaller coinage than this, in my opinion, Adeimantus, proceeds the fractioning of human faculty, so as to be incapable of imitating many things or of doing the things themselves of which the imitations are likenesses" "Most true," he replied —*The Republic* . . . trans by Paul Shorey, Putnam, 1930, Vol I, pp 233-35

On the other hand, the romanticist too often fails to perceive any beauty but the artistic or the natural, thus ignoring the one aesthetic value in the apprehension of which Plato is supreme. I suspect that this is owing to the common romanticist belief that beauty must be reflected in a richly sensuous medium.

Plunge deep thy soul in sense
That sense may flower in soul

But the beauty of moral freedom is wrought in sterner stuff. If we would find its nearest artistic counterpart in the realm of semblance, we must turn to the metaphysical poets, where the effect rides rather upon ideas than upon mere sensuous images, where the very medium is often intellectual or suprasensuous. Plotinus, who, we have noted, was one of the first to consider the doctrine of semblance, approaches this position when he writes of intellectual beauty. "The color flowering on that height is beauty; or rather all there is color and beauty through and through, for the beauty is no mere bloom upon

the surface." (*Enneads*, V, 8, 10.) And sensuous beauty must always be, in this sense, superficial or a matter of semblance.

FREEDOM AS SELF-KNOWLEDGE

Perhaps the most startling, if not the most formidable, aspect of recent positivism is its bold reduction of value judgments to imperatives and the subsequent denial that an imperative constitutes an assertion of anything more than the desire or volition of the speaker. According to this dictum, there can be no normative science of ethics. The psychologist, the sociologist, the biographer, may study the many imperatives that litter the terrain of human history, but such imperatives are not propositions that can be verified or denied, but merely indications of the diverse states of mind that happened to characterize the people who formulated them. On such a view value statements are neither true nor false. They assert nothing that can be proved or disproved. Thus they are better stated in the imperative mood, which does not involve even the appearance of making an assertion.

This is revealed as soon as we apply to such statements our method of logical analysis. From the statement "Killing is evil" we cannot deduce any proposition about future experiences. Thus this statement is not verifiable and has no theoretical sense, and the same thing is true of all other value statements.

Perhaps somebody will contend in opposition that the following proposition is deducible: "*If a person kills anybody he will have feelings of remorse.*" But this proposition is in no way deducible from the proposition "*Killing is evil.*" It is deducible only from psychological propositions about the character and the emotional reactions of the person. These propositions are indeed verifiable and not without sense. They belong to psychology, not to philosophy, to psychological ethics (if one wishes to use this word), not to philosophical or normative ethics. The propositions of normative ethics, whether they have the form of rules or the form of value statements, have no theoretical sense, are not scientific propositions (taking the word scientific to mean any assertive proposition).—Rudolf Carnap, *Philosophy and Logical Syntax*, pp. 24-25. Italics added.

The italicized passages just quoted are true, but Carnap has ignored the alternative: perhaps it is true after all that "Killing is evil" may, under certain postulates, be deducible from "If I kill anybody I shall have feelings of remorse." This possibility we are to examine in the sequel.

Bertrand Russell has presented virtually the same argument as does Professor Carnap except that he is willing to classify his position as a form of subjectivism. This latter point Carnap does not consider, confining himself rigorously to a discussion of the relations of imperative to proposition. Russell writes:

When a man says, "This is good in itself," he *seems* to be making a statement, just as much as if he said, "This is square" or, "This is sweet." I believe this to be a mistake I think what the man really means is. "I wish everybody to desire this". If what he says is interpreted as a statement, it is merely an affirmation of his own personal wish, if, on the other hand, it is interpreted in a general way, it states nothing, but merely desires something.—*Religion and Science*, p 235

If, now, a philosopher says, "Beauty is good," I may interpret him as meaning either, "Would that everyone loved the beautiful". . or, "I wish that everybody loved the beautiful". The first of these makes no assertion but expresses a wish, since it affirms nothing, it is logically impossible that there should be evidence for or *against* it, or for it to possess either truth or falsehood *The second sentence, instead of being merely optative, does make a statement, but it is one about the philosopher's state of mind, and it could be refuted only by evidence that he does not have the wish that he says he has.* This second sentence does not belong to ethics, but to psychology or biography. The first sentence, which does belong to ethics, expresses a desire for something, but asserts nothing —*Ibid.*, p. 236. Italics added

From the point of view of the new empiricism, which denies that imperatives are verifiable, we must rest with Bertrand Russell's comment:

I conclude that, while it is true that science cannot decide questions of value, that is because they cannot be intellectually decided at all, and lie outside the realm of truth and falsehood —*Ibid.*, p 243.

The last lines italicized in the above paragraphs may serve as a starting point for criticism. Russell's statement in these lines is true, and here, despite his own conclusions, lies the foundation of a systematic study of ethics. Russell seems to doubt that the philosopher can learn anything concerning value by examining his own state of mind. Here perhaps he is a victim of the very concept—or the phantom thereof—that he seems so eager to dismiss, the notion of an "absolute" value that could not possibly reside "in his mind." It is, after all, a real problem for us to determine just what we do wish, what imperative or optative we can entertain sincerely; and this inquiry is a genuine part of the intellectual enterprise. Certainly the individual, the self of mature reflection, as opposed to the limited consciousness of a moment of rage, cannot be said really to desire the destruction explicit in the profane epithet that he may apply to some annoying member of his acquaintance. But if he stops to consider what he really does wish to bring upon this person, he may have raised a very nice problem in self-examination. His "real" desire can be formulated only after a period of reflection. Perhaps in such reflection he realizes his ideal, ethical self. The concept of his ideal self affords a fruitful working hypothesis so long as he does not attribute to it motives that he has not actually experienced in thoughtful examination of ethical problems.

Let us argue from the postulates that a thing has value for you if it is desirable; and that it is desirable if you "really" desire it—that is, if you continue to desire it after having considered it fully, so to speak, in its own right and in that of its consequences. If you desire a thing after hasty and incomplete consideration, you may insist that it has value, but this is a narrow and dangerous judgment and if you follow it you may regret your haste. A judgment of value, like a hypothesis of natural science, is verified, although never perhaps exhaustively, by experience consequent to its formulation. If we continue to find our desires satisfied in a way of life or in an institution, we become more thoroughly convinced that it is truly desirable or valuable. Ethical life requires a constant criticism of the way

in which we formulate our desires, and we must beware of accepting anything as desirable simply because many people seem to do so and we hesitate to admit, even to ourselves, that we are not like them or that they may be wrong in reporting their desires.

Anything has value for you if it is desirable, but you cannot determine what is desirable by any shallow or superficial introspection. You must consider your experience carefully and learn to recognize when prejudice, snobbishness, or fear drives you to a premature statement. You may indeed study your own state of mind and judge its consistency, much as you would consider the mind of another whose actions you observed, except, of course, that you are much more easily aware of the emotional character of your own consciousness than of that of another which may not present any outward manifestation easily to be recognized. Thus you may learn something of your own attitude toward certain people without coming upon any direct assertion of like or dislike. You may, in a cool hour, recognize that you are apt to fret over your mother-in-law's weakness for gossip, while you happily sympathize with her daughter's "interest in people." Having noticed this, you may find it necessary to reconsider your recent statements concerning the indecency of all comment upon the private lives of one's companions. To such knowledge of our own evaluations, canons of induction can evidently be applied. Hence it is clear that in determining your personal scale of values, the optatives and imperatives which you have uttered may well be considered as propositions—that is, as reports upon what you find desirable. And it may very well be that in lust, anger, or despair, you desire things which broader consideration will show are clearly not desirable. At such times you must admit that your early statements were false in that they have failed of verification. "I thought that this was what I really wanted, but I was sadly mistaken."

It is true that the ethical self concerning whose real desires we frame hypotheses in our value judgments is not to be observed wholly at any one moment. It is to be approached, like the solar sys-

tem or the atom, through a series of tentative statements subject to correction. Its characteristics can be determined but not observed *totum simul*. Even so, any significant statement concerning my own ethical self and its desires can be reduced to reports upon actual desires that I find myself entertaining through given periods of experience.

To be sure, we may be told that our investigation so far is only a matter of psychology and not one of philosophical ethics. Now it is true that so far we have had to do with values limited to the sphere of the individual's evaluation. Can we go further and exhibit an imperative that we may argue indicates something desirable for all men?

We have already noted that the Socratic enterprise of knowing oneself is free from the charge of being a pseudo-inquiry. Let us now argue that the Socratic *Gnothi sauton* is an imperative "valid" for all human beings—in other words, that self-knowledge is desirable for all men. In this discussion we must keep two imperatives or optatives distinct from one another.

1. Would that I knew myself!
2. Would that all men knew themselves!

We are considering the former and we are not asking whether such self-knowledge is universally desired, which in all probability it is not, but whether it is considered desirable by all men.

Let us suppose now that someone objects: "I do not find self-knowledge desirable. I find that constant concern with my own desires and needs generates too great a preoccupation with my own life, which makes a free enjoyment of living impossible." Or some other objection may be advanced: "Knowing what I really want involves recognizing that many of my motives are not what I would like to think them. This makes me unhappy and hence I do not find self-knowledge desirable." But when he concludes, "I do not find self-knowledge desirable," he is, after all, formulating an important piece of self-knowledge. The upshot of the matter is simply this: If a man says, "I do not want to know what I really desire," his

words can be interpreted as expressing only a mere passing wish. No other interpretation is possible, for if he considers such a statement as expressing a genuine desire upon which he is willing to form his personality, he is clearly accepting the self-knowledge which reveals this preference as a permanently desirable aspect of his character and then he is certainly obeying the Socratic imperative, "according to his lights," obscure as they may be. However, if his statement expresses a mere passing wish, he cannot be said to feel or to be aware of a permanent interest in anything, at least not at the moment, and his attitude is definitely submoral.

"Know thyself" is an inescapable imperative for those who consider their conduct important, just as "Respect consistency" is an inescapable requirement for those who consider their ideas and opinions important. The parallel is clear: We cannot significantly deny the importance of consistency without employing consistent discourse, just as we cannot deny the desirability of self-knowledge without appeal to self-knowledge, which must in this case appear desirable, unless we prefer to have no plan of life at all. On the other hand, we cannot by argument force anyone to accept the necessity of consistency without presupposing its logical importance in the very form of our argument. This latter consideration again parallels the ethical situation. We cannot convince anyone of the desirability of the Socratic imperative without asking him to put the imperative to the test of his own self-knowledge. And if our opponent has no interest in knowing what he wants in the first place, we cannot persuade him to make the test. People who are willing to drift in their conduct or in their opinions cannot be reformed by the mere exhibition of the principles of ethics or of logic.

Insofar as a person knows what is desirable for him, let us call him internally free. Insofar as he succeeds in obtaining these things, let us call him externally free. This may surprise some readers who think of virtue in terms of action and are not used to considering the good man as the one who knows what he wants. The following passage from Leibniz may help the reader to accept this point of

view. After all, we may entertain maxims so abstractly apprehended that they do not move us to action. But we do not *see* these maxims as desirable guides. Leibniz comments

....in matters and on occasions in which the senses have very little influence, most of our thoughts are, so to speak, insensible (I call them in Latin *cogitationes caecae* [blind thoughts]), that is to say, they are void of perception and feeling and consist in the bare use of symbols, like the work of those who make calculations in algebra, without looking from time to time at the geometrical figures ... We often reason in words, hardly having the object in mind at all. Now this knowledge cannot move us: something vivid is required that we may be moved.—Leibniz. *The Monadology* [etc.] ..., trans. by Robert Latta, Oxford University Press, 1925, p. 147.

We do not really know what we want until we are free from *cogitationes caecae*, and when we are free from them we find that we are equipped with full and vivid apprehension of what we desire. Action follows easily upon such vision.

If someone objects that our treatment of value, since it confines itself to desirability, is not objective but depends upon the subjective psychological equipment of the individuals who evaluate, we may admit that the word "subjective" may be defined so as to refer to our doctrine of value. As we have defined value it is not independent of desire or need and hence it is in one sense subjective. It is not, however, a matter of "taste," if by "our taste" is meant any employment or dislike that we may *happen* to entertain at a given moment.

We may also hear that a theory such as this offers an inadequate foundation for social ethics, being no more than an extreme individualism. But after all it may be said that society never does more than express in its codes the opinions and the interests of its articulate citizenry. The ethical problem always lies with the individual, who often includes in his reflections his own reaction to many social conditions. "Public ethics"—that is, the establishment and the alteration of codes and conventions—depends for its moral content, and even for its authority, upon the reflections of individuals who consider what sort of social life they really want to see in existence.

It is, however, true that on our interpretation, we cannot say that the optative "Would that all men knew themselves!" is necessarily valid for all who think about conduct. This is because we cannot show that this optative is involved in the very act of trying significantly to deny it. In fact, it is to be suspected that many thoughtful people exist who prefer to see the masses disciplined rather than educated, and such people prefer docility to enlightenment in their fellows. Nonetheless many of these people would admit that self-knowledge for all men, if only it could be completely established, would be desirable. For this latter judgment there seem to be two grounds.

1. We would prefer to be treated thoughtfully by our comrades, and we expect such treatment from men of internal freedom.

2. We find internal freedom aesthetically delightful to contemplate. (Such beauty of character may become the object of a Platonic Eros and for people inspired thereby there can be little doubt that the optative "Would that all men possessed internal freedom!" is valid.) These considerations, however, although they satisfy many, are not of the sort to establish as inescapable the optative "Would that all men knew themselves!"

»» CHAPTER 6 ««

Decision and Existence

CREATION AND REALITY

We may, as we have seen, employ various analogies to interpret our world, its manifold contents, and our place among them. These patterns of interpretation vary in scope of application and in authority. Such considerations depend upon our interests and our point of view. Thus patterns of interpretation—the “notions” that were spoken above—may be described as useful, helpful, or fruitful, depending upon our intentions, but one would hesitate to speak of any one of them as final or fundamental. Hence we hesitate to describe the “real” itself as revealed through one notion rather than through another. This is in keeping with much recent thought concerning the meaning of the terms “real” and “reality.” Consider the following as an example:

The meaning of “real” appears to be *relevance to the realm of discourse in terms of which the judgment of reality is made*. To this extent, then, the application of the words “real” and “unreal” shifts according to the realm of discourse that is taken as standard of reference. The nature of a realm of discourse is determined by the nature of the set of problems that constitutes it. Consequently when we have established and clearly understood a set of problems, we have therein fixed the meaning of “real” *relatively to those problems*. If our problem is to determine the acceleration of a falling body the color of the body is irrelevant—that is, unreal with respect to the problem. . . . The task of metaphysical criticism may be restated as the task of clarifying afresh within each new context, the specific meanings that “real” will from time to time have.—James

Burnham and Philip Wheelwright. *Introduction to Philosophical Analysis*, Holt, 1932, pp. 183-84.

This passage contains an admirably clear statement of what may be called the modern attempt to eliminate ontology. It is characteristic of much of the most competent and rigorous thinking of the present day. Ontology, the study of *being* as such, has lapsed from its ancient position of "first philosophy" and we find its place occupied by inquiries concerning scientific methodology. It seems to many thinkers legitimate and fruitful to talk of "real" and "unreal" in a special context, but pointless to ask questions about "*the* real world," or about "being" in general.

According to Professor C. I. Lewis, the criteria of the "realms of discourse" mentioned above (the term is not his) are determined a priori. They are not the content of experience or of a revelation. They are the product of the mind's own legislative power, whereby we "delimit" such realms as, for instance, the mechanical or the biological somewhat as is described above. Thereby we set up standards for our interpretation of empirical facts, and we frame judgments concerning the "reality" or "unreality" of the sensuous detail given in experience.

"A priori principles of categorial interpretation are required to limit reality, they are not required to limit experience."—C. I. Lewis. *Mind and the World-Order*, p. 222.

For Professor Lewis "Nothing is real in all categories; everything is real in some category" (*Ibid.*, pp. 321-22) (*Dream, hallucination, illusion* are categorial terms).

It is *not* a priori certain that any given experience is validly interpretable in a particular category—for example, the physical. But we *do* know with certainty and a priori that if *X* is a physical thing, then it will conform to certain general principles which can be laid down in advance because they constitute criteria of the physical... To fail to conform is to be repudiated as not pertinent to our present study—*Ibid.*, p. 322.

The repudiated is the "unreal"—the irrelevant.

Shall we then recognize a number of "reals," each determined by our interest in a distinct type of inquiry? But this very recognition involves important considerations, which may carry us toward a more fundamental definition of reality than that of methodological relevance. It is clear that the mathematical, physical, or biological realms of discourse, for instance, overlap, the animal body being at once spatial, physical, and alive. We can then point to a particular entity and say that it belongs to more than one realm of discourse. When we say that the entity *X* can be studied from the point of view of two or more sciences, we do not mean that *X* as a whole is a reality for any realm of discourse mentioned. It is exhausted by none of them. But still as a whole we can consider it, as we are doing now. And this discussion must determine a realm of discourse unless it is wholly to be outlawed.

But what can we say concerning the entity *X* if we will not surrender it to the specialists? That it *exists*? Very likely. But what further can be said of existence or sheer being? We may seek in vain by the methods of traditional analysis for a characteristic common to all existents. We may, indeed, quite baffled, quote Hegel's dictum that pure being is pure nothing or avoid the problem, at least apparently, by talking about "possible objects of sensuous perception" or "space-time manifolds," whereby psychological or mathematical terminology is perverted from its proper function to describe existence in general. But there still remains the possibility that we perceive existence through some mode of awareness prior to and independent of the sophisticated thinking by which a scientific realm of discourse is determined. Let us defend this thesis.

We do not—many of us—today believe that the concrete world as a whole is *causa sui* or self-caused. But we apparently do, all of us, believe that the universe is, as Quintillian said of the style of Pericles, *instans sibi* or compact. By this we mean that all of us admit the presence of a concrete or compact world differing from the structures of theory or the unrealized schemes of practice. It is to this

world, to what a French philosopher, Professor Blondel, has called a *solidum quid*, that the natural sciences look for subject matter. The concrete world, the one ensemble of things in which we live, is present to thought as *instans sibi*. Anything that actually exists, exists *with* and conditioned by the other entities, and this fact of togetherness is always recognized, although it cannot always be made explicit in detail. Consider Peirce's reflections upon the nature of fact:

...that which gives actuality is opposition. The fact "takes place." It has its here and now; and into that place it must crowd its way. For just as we can only know facts by their acting upon us, and resisting our ... will, ... so we can only conceive a fact as gaining reality by actions against other realities. And further to say that something has a mode of being which lies not in itself but in its being over against a second thing, is to say that the mode of being is the *existence* which belongs to fact.

The same conclusion can be reached by another line of thought. There are different kinds of existence. There is the existence of physical actions, there is the existence of psychical volitions, there is the existence of all time, there is the existence of the present ... there is the existence of the creations of one of Shakespeare's plays, and, for aught we know, there may be another creation with a space and time of its own in which things may exist. Each kind of existence consists in having a place among the total collection of such a universe. It consists in being a second to any object in such universe taken as first [that is, it is a fact conditioning the realization of any object taken as sheer possibility]. It is not time and space which produce this character. It is rather this character which for its realization calls for something like time and space—C. S. Peirce *Collected Papers*, Vols. 1-6, Harvard University Press, 1931-35, Vol. 1, § 432-33. The parenthetical comment is an addition.

Peirce's conception of fact is of first importance for ontology. The "character" of existence, which he describes, affords a definite content to the ontological predicate. Existence ceases to be a mere "this." It becomes a "what." The full import of this conception can be grasped only when we undertake to do without it. Suppose actual things and events isolated from one another. There seems to be no contradiction here, but clearly there is something that the human mind is not prepared to accept. Unless we can describe in some de-

gree the concrete marginal conditions of the phenomenon of which we speak, no one is called upon to believe us. As Plato insisted in *Timaeus*, 52, "that which is neither in heaven nor in earth has no existence" Suppose we are told that So-and-so is dead but that our questions as to the precise manner of his demise are beside the point: whether he died in an accident, from disease, or by poison, where he was at the time of his death, all this has nothing to do with the case. He has died and there is an end of it. The "Platonic form" of death is apparently the only condition of So-and-so's dissolution that can be mentioned. The scorn with which such an explanation would be received is an indication of the human mind's respect for the notion of the concrete. We all admit that no bit of actuality is isolated with reference to both its temporal background and its contemporary environment

Concrete entities have histories, and these become involved with other histories that are "taking place" along with them. These histories inflict conditions upon one another. Thus when we consider a concrete entity as the embodiment or the exemplification of a sheer form or pattern, we must recognize many features of its concrete tissue as extrinsic—that is, as not specified in the pattern or implied by it. Histories jostle together and exemplifications of form are pressed upon by a welter of foreign facts, themselves, of course, the embodiment of other forms, which "brutally" or extrinsically conditions their detail. On the other hand, extraconcrete form, pure form, is *isolated* or without extrinsic detail. Since they do not themselves "take place," these extraconcrete or isolated forms may be equally relevant to two or more concrete situations or facts. In this sense, we may say that the extraconcrete entities enjoy an equivalent relevance to many concrete facts, whereas actual things and events are committed to one milieu, in which they have taken place and to which they belong more properly than to any other. Any object enjoying such equivalent relevance let us call a possibility, since the word suggests this relation to the concrete world rather more fully than does "form" or "pattern." There are then many types of

possibility in this sense. classes, laws, ideals, schematic plans for action or for thought.

When a possibility is "realized," "embodied," or "exemplified" in the concrete world, it may seem to have surrendered, with respect to one of its many avenues of relevance, its nature as an isolated entity. It ceases, in this respect, to *appear* as a pure possibility. It seems to present itself as a concrete item in a compact world. But this is merely appearance. When we are aware of embodied form, we must always admit that the possibility here actualized has also other avenues of relevance, even though we may not specify them. Therefore we have to recognize that embodiment has not altered or defaced the possibility. The form is cast into an actual, historical situation, yet in itself, it remains unscathed, unlimited, and inexhaustible.

Possibility and concretion seem to present themselves as the most general aspects of the world order in which we live. And I daresay that there are many of us who would be willing to recognize them without more ado as the prime features of reality, of which we may be said to be directly aware.¹ But the progress of philosophy has always been furthered by the constructive skeptics who resist such conclusions and who will accept them, if at all, only when they see clearly what they sacrifice by withholding their assent. We should acquiesce in so ambitious a hypothesis only if we feel that it is supported by a canon similar to Bosanquet's celebrated principle of "This or nothing." In the immediate sequel the authors will undertake to show how little we can afford to withhold our assent, and so to make clear that possibility and concretion are the indispensable and inescapable objects of all our thinking. If we do not know these, we know nothing at all.

We have hitherto been considering the problem of existence in the third person. We have, along with many others, noted two of the many meanings of "is." The Platonic form "is," and so also any concrete object "is." "It is" can indicate the isolated or concrete

¹ "I" in this chapter is Professor Stallknecht

status of an object. What, now, of "I am"? Is the ego, the "I think," the *cogito* of Descartes, isolated or concrete? Or does it belong to neither order? Plato occasionally tells us that the mind is at home only with the forms; but modern philosophy, starting with the Cartesian *cogito*, recognizes the "I am" as the very archetype of the existential. After all, the Cartesian will point out, we may question all the evidence presented us through our senses, and we are only too painfully aware that our chains of reasoning and of calculation often contain the gravest errors. We have also at times been deceived by dreams of extraordinary vividness and we have then actually confused images with things. Often the most fantastic dreams appear to us as plausible and trustworthy views of our world. Perhaps some malignant demon, bent upon deceiving us, has insinuated into our working consciousness dreamlike images that distort our awareness of things. At any rate, we can hardly afford to accept without reserve the evidence of our senses, our imagination, or our prolonged reasoning. We may, indeed, doubt the existence of all the objects so intended; but we need never—in fact, we cannot—extend this doubt to question the fact of our own consciousness. We cannot, in short, doubt that we doubt, and in this sense our doubting consciousness stands beyond question as a real or substantial activity. Such consciousness *exists* beyond any question.

The argument of the *cogito* leads Descartes to the belief: *My consciousness is actual*. Strictly speaking, Descartes was perhaps wrong, or at least ambiguous. Although, as we shall see, deeply involved in actuality, the "I am" is not actual in the same way as the subject of the third-person judgment. Consciousness has a grip upon possibility that we do not attribute to the unconscious concrete thing. The essence of the *cogito* is decision, as the voluntaristic Descartes knew; it is the act of accepting or rejecting theoretical or practical alternatives; of this essence the act of Cartesian doubt is a happy and spectacular example. That consciousness is inseparable from choice or acceptance of a set of alternatives at the expense of

another set can hardly be challenged by anyone who considers the important element of selective attention by which the content of consciousness is so largely determined. Such divergent thinkers, for instance, as Royce, Bergson, Whitehead, and Sartre would all agree that consciousness could not be what it is without this central power of decision. Alternatives appear as structures of possibility, nonetheless.

It is with pleasure and a sense of reassurance that we find Professor Lewis insisting upon a very similar point, although in a somewhat different context.

The *a priori* has its origin in an act of mind; it has in some sense the character of fiat and is in some respects like deliberate choice. The *a priori* is a peculiar possession of mind because it bears the stamp of the mind's creation. And the criterion of creativity is not inevitability but exactly its opposite, the absence of impulsion and the presence of at least conceivable alternatives—*Op cit*, p. 213

We may heartily agree with Professor Lewis that at least certain of the categories that outline the several fields of scientific inquiry have been *chosen* by the act of a creative ingenuity which does much more than copy something given. This is splendid. But has Professor Lewis gone far enough? These acts of choice can hardly take place in a vacuum, nor can they be without structure. The act of choice itself deserves attention; its nature must be stated and insofar as possible, explained. And to contribute toward this end is our present undertaking.

If there were no concrete world limiting consciousness there would be no decision, for there would be no reason for choosing between possibilities, which would then float in an ideal innocence. In such a world, if world it may be called, there would be no problems, either practical or theoretical. Incompatible alternatives offer a problem only when we know that we can embody or verify but one of them in concretion. Aside from this there is no conflict, but merely contrast, and contrast where there is no point of view from which to draw distinctions. To many this may sound like sheer pragmatism,

the criterion of reality being derived from voluntary decision, which stands very close to the essence of action. But a little reflection should make clear that the pursuit of theory also involves decision, the consideration and rejection or acceptance of possibilities.

Awareness of concretion and possibility, of form and thinghood, is the ontological "revelation," or primordial apprehension of the world structure, to which both theory and practice conform. Losing sight of this revelation would paralyze the human mind, which would then be unequipped to choose or to decide. Denial of this revelation appears as conceivable only to the most sophisticated theorist, and even he must ignore his denial if he is to live or even to transact the business of the intellect.

The ontological revelation seems to be a "natural light" that accompanies all theoretical and practical decision and gives it form. So in philosophy, the status of consciousness is bound up with that of concretion and possibility. Consciousness is an amphibian breathing the atmosphere of both these orders, but unlike the frog, requiring both atmospheres at once. Possibility and concretion are the most general conditions of the human act. Indeed, we never even doubt, Cartesianwise, without setting our situation against the background of the possibility of our denying a proposition, even though we may decide to accept it in the end.

Thus on one point this reinterpretation of Descartes's *cogito* differs very sharply from the master's own conception. Having shown that the *cogito* is intimately bound up with possibility and concretion, we are in no danger of considering it as, even apparently, isolated from a world. There is no need to prove the existence of entities distinct from the *cogito*. Such an argument is included in the description of the human act itself. You cannot have decision without what may be called the ontology of alternatives. And the ontology of alternatives constitutes a description of the theater in which the act of decision takes place. We can challenge anyone to conceive of another setting for decision. Certainly the history of philosophy contains no formidable rival. No philosopher has ever denied the

presence of concretion, although some of them have considered it as comprising no more than their own states of mind. And no one has the right to deny consciousness a grip upon possibility unless he is ready to describe consciousness as wholly subvoluntary. And if he does this, he will have Professor Lewis himself, among others, to contend with.

Since *X* is given, if condition *Y* should be supplied, then *Z* would accrue. When *Y* is a condition which I myself fulfill, or refrain from fulfilling, my knowledge serves to guide my action to desired ends. The sweetness of the apple, the hotness of the stove, etc., are known by means of such truth of hypothetical propositions: this round, ruddy somewhat being given, if I should bite, it would taste sweet . . . if I could *do* nothing about experience, then since such hypotheticals would be meaningless, reality would be no thicker than an inevitable stream of consciousness—that is, I should not confront *reality* but at most a fatally determined life.—*Op. cit.*, p. 357

In this case, condition *Y* clearly must be apprehended as a possibility to be realized. Certainly we cannot apprehend it in detail and with its margins as a concretion before it takes place in the actual world. It is interesting to notice, although perhaps not essential to our present argument, that Professor Lewis believes determinism to be inconsistent with our ability to realize possibilities.

But there is an even more pertinent and explicit mention of possibility in Professor Lewis's work. He offers as a "fundamental requirement of knowledge," a principle to the effect that it is not "the case that every recognizable appearance is equally associated with, or followed by, every other" (*Ibid.*, p. 367). Professor Lewis then comments,

. . . although this has the appearance of a limitation of the possibilities of experience it has in the end no alternative. To put it in paradox, every possible experience is *ipso facto* a possibility of experience, but it is not possible that all possibilities should be actual. Any possibility is a possible actuality, but it is not possible that all possibilities should be concomitantly real. The coincident actuality of all possibilities is im-

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possible. Thus the requirement that actuality be a limitation of the all-possible, is not itself a limitation of the possibilities.—*Ibid.*, p. 368

Professor Lewis has not only recognized possibilities and actuality as fundamentally involved in the primary requirements of knowledge, but he has penetrated the nature of them both when he argues that actuality can carry only a limited section of possibility at any one time.

To conclude: We have seen that all purposive activity, whether theoretical or practical, includes reference to both form and thinghood, to possibility and actuality. Now let the term "reality" indicate the interplay of these two orders of a compact, concrete world which comprises a realization of some possibilities and the exclusion of others (Many of us will think of this reality as a process whereby exemplifications of possibility succeed one another in historical series, whereby time feeds space with succeeding exemplifications that cannot take place together. But working out this conception is not essential to our present argument.)

Shall we then be justified in speaking of such reality without the methodological limitations surveyed above? I fail to see why not. In what context could this entity just defined prove irrelevant or "unreal"? Certainly in no practical context and certainly in no natural science where we must choose between hypotheses, deciding in favor of one hypothesis as true of the actual state of affairs. Nor in mathematics, even though here we are sometimes said to ignore the question of actual exemplification. In mathematics, after all, we need the *contrast* between possibility and concretion in order to understand the analytic nature of mathematics, to know how mathematics differs from, say, physics.

POSSIBILITY AND EXISTENCE

Professor Lewis's treatment of possibility will recall to the student of the history of philosophy Leibniz's ingenious account of God's creative activity. According to this theological scheme, God considers an infinite array of possibilities, from which he chooses a

single system of compatible possibilities—"compossibilities," Leibniz calls them. This system of possibility is organized as a coherent, concrete world order, a cosmos complete in every detail of its history. It is the "best of all possible worlds" and as such God calls it into existence. Leibniz's theory is often considered as overingenious, the result perhaps of a too adventurous speculation. Nevertheless, his theology introduces us to certain problems concerning possibility, actuality, and their relationship to the autonomy of the human individual. Hence the elaborate scheme of Leibniz's philosophy is worth our attention.

It may be helpful to recall that here, as elsewhere, Leibniz's pluralism finds a complementary counterpart in Spinoza's monism. Spinoza never deserted the notion of a single world system wherein existence exhausts all possibility, so that *sub specie aeternitatis*, the two are the same.

To those who ask why God did not so create all men, that they should be governed by reason alone, I gave no answer but this: Because opportunity was not lacking to him for the creation of every degree of perfection from highest to lowest, or more strictly, because the laws of his nature are so vast as to *suffice for the production of everything that may be conceived by an infinite intelligence*—*Ethics*, trans. by R. H. M. Elwes, Tudor, 1933, Book I, Appendix. Italics added.

For Leibniz, on the other hand, the actual world is a selection from the total realm of conceivable possibility so that the two are thought of as ultimately distinct. By far the major section of possibility is denied existence. Creation rejects as well as realizes and rejects more than it realizes. Creation involves rejection based upon the divine approval and selection of one system as more choice-worthy than any other, because it possesses the maximum of essence or of unity and variety—shall we say, the maximum of macrocosmic integration and microcosmic differentiation?—throughout its structure and detail. It is thus the most interesting and satisfying world that God, in his wisdom and goodness, contemplates. This chosen world and this one alone is granted existence.

Leibniz distinguishes between God's choice or nomination of the best of all possible worlds and the fiat whereby this world is projected into existence. The first is called an "antecedent" will, the second, a "consequent" or "decretory" will. One way of stating our problem is to ask, Just what is the function of the decretory will? Leibniz, to be sure, insists upon the supreme importance of this act of will. He assumes (*Monad.* 53) that only one world can be actual, and that if no one world stood out as the best, there would be no creation. (*Theod.* 8).

But the question remains: Just what does Leibniz's God give the chosen world when he grants it *existence*? Just what does he withhold from the alternatives? What finish or polish is added to the choiceworthy structure of "compossibility" to constitute it an existential order? (Cf. J. Maritain, *Existence and the Existent*, p. 65.) I had this problem brought home to me some years ago by a clever student who unintentionally outdid Voltaire in his effort to embarrass Dr. Pangloss, the optimistic philosopher.² "How do we know," he asked, "that this particular world system of ours, including such things as the Lisbon earthquake, the slave trade, and all that man has done and wanted to do to man—how do we know that this world system is not one of the rejected alternatives? Surely God has denied existence to so shabby and unworthy a design. Surely *we* are only possibilities to whom it would be an act of cosmic perversity to grant existence. As rejected candidates for existence, we may be thought to parody and caricature the true creation, which as the best of all possible worlds must far surpass our sorry lot."

I have always admired my student's ingenious tour de force. By such strategy the problem of evil is dismissed, even though "our world" is dismissed with it. And what a happy way to revive Descartes's conscientious doubts! No malignant demon is needed to deceive us now. God himself maintains a world situation in which our nonexistence is perfectly thinkable and very probable. Once

² Read Voltaire's *Candide*, a satire on Leibniz.

we have questioned the existence of ourselves and our world, can we summon the arrogance to argue that God could not conceive a nobler world than ours to create? Unless we do, we cannot claim our existence with confidence. And if we do claim to exist, we hardly know what we are claiming.

Mention of Descartes calls to mind my first efforts to refute my ingenious student. Naturally enough, I invoked a line of argument based on the *Cogito, ergo sum*. Sheer possibilities, I objected, could not be conscious of themselves even as possibilities. We do not suffer from possible, but from actual, doubts. He and I, I assured him, were more than possibilities. But there my opponent stood his ground and quoted Leibniz to good effect. We might not, he said, expect abstract or schematic possibilities to be clothed, so to speak, in consciousness and feeling. But let us repeat that Leibniz's possible worlds are not outlines, sketches, or blueprints. Each is a fully constructed system of compossibility, exhaustively concrete in precise detail, and each individual "inhabitant" of such a world shares in its concrete texture. In support of this let us examine two passages. Consider the following sentence from the *Discourse on Metaphysics* (section XIII):

We have said that the concept of an individual substance includes once for all everything which can ever happen to it and that in considering this concept one will be able to see everything which can truly be said concerning the individual, just as we are able to see in the nature of a circle all the properties which can be derived from it—*Op. cit.*, in Leibniz, *Discourse on Metaphysics*, trans. by G R Montgomery, Open Court, reprint ed., 1924.

Also the oft-quoted letter to Hessen-Rheinfels in which Leibniz considers manifold possibility with reference to the career of a single human being, here symbolized by the Biblical Adam:

...by the individual concept, Adam, I mean, of course, a *perfect representation of a particular Adam* who has certain individual characteristics and is thus distinguished from an *infinity of possible persons* very

similar to him yet for all that different from him (as ellipses always differ from the circle, however closely they may approach it). God has preferred him to these others because it has pleased God *to choose precisely such an arrangement of the universe*, and everything which is a consequence of this resolution is necessary only by a hypothetical necessity and by no means destroys the freedom of God nor that of the created spirits. There is a possible Adam whose posterity is of a certain sort, and an infinity of other possible Adams whose posterity would be otherwise; now is it not true that these possible Adams (if we may speak of them thus) differ among themselves and that God has chosen only one who is precisely ours? There are so many reasons which prove the impossibility, not to say the absurdity and even the impiety of the contrary view, that I believe all men are really of the same opinion when they think over a little what they are saying—Leibniz to Count Ernest Hessen-Rheinfels, April 12, 1686.—*Op. cit.*, p. 80. Italics added.

At this point, although I perforce abandoned my first objection, I was able to overreach my ingenious opponent by carrying his argument somewhat further than he had anticipated. I insisted that if we meditate as Leibniz suggested upon the above quotation, increasing difficulties will appear from another quarter. We may perhaps grant that Leibniz, in opposition to Arnaud, defends with verbal facility the "spontaneous freedom" of the "chosen" Adam, or the "chosen" Judas, who once being admitted to existence, proceeds to be himself just as God intends that he should. But, at this stage in our argument, the interesting point is simply that each possible Adam carries with him a complete family tree and a biography with its place in history, complete without lacunae, all of which must be, if this Adam is elected, admitted to existence as a whole. This is true of every possible Adam. And yet, only *one* Adam is fully real—only *one* has enjoyed existence. It is, according to Leibniz, absurd and impious to doubt this proposition. However, as we consider the metaphysical situation that Leibniz has accepted, the proposition appears increasingly untenable. After all, how can we *exclude* a possible Adam from existence? For what meaning can we attach to existence beyond concrete compossibility? And every

possible Adam exhibits this, since he belongs to a possible world.

Let us turn in illustration to the *Theodicy*, using Gentile's résumé, where the priest Theodore is being instructed by the Goddess of Wisdom. Theodore is shown a cross section of many possible worlds as he examines the metaphysical dossier of the notorious Sextus Tarquin. Leibniz is again concerned with the question of freedom. Sextus has not been coerced, although one of the less admirable versions of his life has been admitted to existence. This version is chosen as a step toward establishing the Roman Empire of which God and Leibniz approve. In the palace of the Fates:

... is portrayed not only all that happens, but all that is possible, and he is able to see every particular which would have to be realized together with and in the system of all the other particulars in its own quite special possible world "Thou art aware," says Pallas to Theodore, "that when the conditions of a point which is in question are not sufficiently determined and there is an infinity of them, they all fall into what geometers call a locus, and at least this locus (which is often a line) is determined. So it is possible to represent a regulated series of worlds all of which will contain the case in point and will vary its circumstances and consequences." And all these worlds existing in idea were exactly pictured in the palace of the Fates. In each apartment a world is revealed to the eyes of Theodore, in each of these worlds he always finds Sextus always the same Sextus, and yet different in relation to the world to which he belongs. . . From world to world, that is from room to room, Theodore rises ever towards the apex of a great pyramid. The worlds become ever more beautiful. . . They enter, Theodore overcome with ecstasy, into the highest apartment, which is that of the real world. And Pallas says, "Behold Sextus such as he is and as he will in fact be. Look how he goes forth from the temple consumed with rage, how he despises the counsel of the Gods. See him going to Rome, putting all in disorder, ravishing his friend's wife. See him then driven out with his father, broken, wretched. If Jupiter had put here a Sextus happy at Corinth, or a King in Thrace, it would no longer be this world. And yet he could not but choose this world which surpasses in perfection all the others and is the apex of the pyramid; otherwise Jove would have renounced his own wisdom, he would have banished me who am his child. You see, then, that it is not my father who has made Sextus wicked; he was wicked from all eternity and he was always freely so. [Jove] has done

nothing but grant to [Sextus] the existence which [divine] wisdom could not deny to the world in which he is comprised. He has made it [this world] pass from the realm of the possibles to that of actual being."—*Theodicy*, 414, as rendered by G. Gentile in *Theory of Mind as Pure Act*, trans. by H. W. Carr. Macmillan, 1922, pp. 190-91

Perhaps we may take for granted that the world system displayed at the apex of the pyramid is, viewed as a whole, more satisfying aesthetically and morally than any of the others. But all these systems are *mondes complets* or *bien faits*—that is, worlds presented in exhaustive detail. After all, their concrete consistency is guaranteed by the God who conceives them. After listening to Leibniz's account of the rooms in the palace of Fate, we may feel that the detail of each seems as genuine and as real, if not as excellent, as that of any other. Since chosen and rejected worlds are so alike in logical form, suppose we say that they *all* exist—that divine choice merely awards a badge of honor to the best rather than denying the existence of the alternatives. Hence *all* the Adams, *all* the Judases, *all* the Sextuses, enjoy reality. Not, to be sure, in one concrete setting but, so to speak, concurrently in isolation from each other, each within his own proper system. This would seem to bring us back—but with an obvious and significant difference—to the position of Spinoza quoted above. All things possible to a divine intellect come to be, and all the changes are rung, so to speak, simultaneously. For Leibniz, this would involve infinite variations upon each particular and concrete history,—that is, upon each individual; for Spinoza, more simply, it would involve variations upon types and patterns to be created. That there should be "several me's" is a strangely distasteful suggestion—even, as Leibniz felt, ridiculous and impious. Our sense of personal existence is violated by the suggestion. We think of ourselves as somehow partially built up by our own decisions, and a personality remote from these decisions has no claim upon us. It is not even our "opposite number" or corresponding member. Hence when Leibniz grants full concrete texture to our "other selves" he risks violating our sense of personal existence and decisive

autonomy, even though he will not use the word "existence" of these other personalities.

It should be added that the idea of Leibnizian infinity with all its member systems fully existent has been recently exploited in a shrewd and amusing way by a skillful writer of science fiction, Frederic Brown, a metaphysical Jules Verne, in a novel suitably entitled *What Mad Universe*. In this story the hero is, by a metaphysical miracle, projected from one alternative world system to another, thus surpassing the adventures of Henry James's hero who succeeded only in moving to and fro on the time dimension of a single world system. Some such idea seems at least to have occurred to Leibniz, for in *Theodicy* 8 he is apparently repudiating it:

... if there were not among the possible worlds one that stands out as the best, God would produce none of them. By world, I mean the entire sequence and collection of all existing things, so that several worlds can exist in different times and different places. For it would (still) be necessary to count them all together as one world, or, if you will, as one universe. Moreover, when one fills all times and all places, it remains always true that one may do so in an infinity of ways, of which God must choose the best, since he does nothing without acting according to an ultimate reason

Here Leibniz dismisses this line of thought with undue haste and in a manner hardly consistent with his total philosophy. We need not consider alternative worlds as being spatially or temporally related to one another. Certainly Leibniz, opposed as he was to Newton, cannot think of God as filling an *absolute* space and time with created content. If there are alternative systems of existence, each has its own space and time (perhaps it should be added today, even its own geometry) and these spaces and times are not continuous or "in contact" with one another.

Thus Leibniz's parsimonious treatment of existence invites some most unwelcome developments in his doctrine. Perhaps *all* the possible worlds exist. Then again perhaps *none* exist except as fully documented plans in the divine intelligence, which alone can

claim existence in its own right. Furthermore, even if we argue that *one* of the possible worlds must exist, we are unable to characterize such existence or to be sure that "our" world exhibits it. The theology of world choice seems existentially bankrupt.

It would seem that this is owing to Leibniz's tendency to equate existence with fully determinate concretion—that is, with concrete fact rather than with the energy or activity whereby disjunctive possibility yields to or is transformed into conjunctive actuality. This passage toward realization may be described as creative or it may, as we shall see, be recognized as the act of being itself, the only fully *existent* entity in the world. Recently the name "existentialist" has been reserved for those who recognize such an act as the central concept of their philosophy. In this sense, Leibniz does not seem to be an existentialist—certainly not in his theology of world choice. But on second thought, we may feel that Leibniz is not to be dismissed quite so easily, even by a polemical existentialist. After all, his total thought contains much that his theodicy conceals. Thus his physics may be more helpful than his theology. Let us recall that he repudiated the Cartesian identification of physical matter with extension or mathematical form. Hence he might be inclined to see more in existence than even the most intricate concretion. In this connection, Leibniz comes nearest to hitting upon a satisfactory distinction when in the *Principles of Nature and of Grace*, he writes: "All nature is a *plenum*. There are simple substances [or monads] everywhere, which are actually separated from one another by activities of their own, and which continually change their relations" (in *The Monadology* . . . trans. by Robert Latta, p. 408). Substance has been defined as a "being capable of action," springing from an "internal principle." Latta comments as follows: "The idea is that each Monad is separated from every other inasmuch as it has spontaneity, i.e. an activity entirely its own; for if it had merely an activity like motion, which passes from one thing to another indifferently, it would be united with all other Monads in a continuum and would thus cease to be a real, independent unit" (*Ibid.*, p. 408n.).

Now if in Leibniz's system such self-distinguishing activity could be predicated only of *existing* monads, so that it might be said to distinguish them from *possible* monads, then we would have a way out of our embarrassment. Leibniz, it is true, does not employ the notion in this way. Some degree of spontaneity would seem to be recognized in the concept of *any* possible monad, certainly in that of each alternative Adam. It is true also that Leibniz at times recognizes a sort of self-assertion proper to possibility which somehow demands existence (*Monad.* 54). There can be no question that spontaneity and freedom fall on both sides of Leibniz's world order—belonging both to the existing and to the possible.

But let us return to Leibniz's single substances as they separate themselves from one another by activity of their own. As Latta has pointed out, they thus separate themselves from their neighbors and maintain a status distinct from that of drops of water in the ocean. Let us here step beyond Leibniz, yet following his intention in the light of more recent thought. This separation, we may argue, should cut deeper. It should be metaphysical as well as physical. These substances must separate themselves from the *possibilities* which they reject as they make their way in the world. If we are to comprehend the activity of a monad so conceived, we must recognize that the monad is itself in touch with many possible worlds or with isolated sections of them. Existence is the *interplay* of actuality and possibility, an interplay that Leibniz's segregation of actual and possible worlds renders insignificant. Thus no actual monad is *enclosed* in a single given system or continuity of world history including a future. Like Leibniz's God, each finite monad is in contact with real possibility. As a finite being, he faces an undetermined but determinable future.

EXISTENCE AS FREEDOM

To *exist* is to have an unfinished history and a problematic future, the two being united in decision. Our future is still in the making, and we are separating ourselves from a manifold of possibilities:

"Separating out from the boundless," as Anaximander might have said, and identifying ourselves with our intentions as they take shape. Such activity is what we mean by "existence." It is an activity of selective realization. Perhaps we should call it creative. Consider the young man who has completed his more general education and who now undertakes to choose and enter upon a career. Here is a symbol of existence. To exist means to stand upon a realized past facing a sea of futurity, to breathe like an amphibian the atmosphere of determinate past and undetermined future, to move constantly to and fro between actual and possible. There is for each of us a given actuality—our past—and we are all involved in it deeply. For each of us there are many possible futures, "lives," "roles," or "characters" lacking in the dense, close-knit concretion of the past. Existence is the compresence of the two orders. Conscious choice is the fullness of existence, in which past and future are *present* to one another in the freedom of self-determination. We should write *Opto* rather than *Cogito, ergo sum*; our sense of existence as distinct from essence or possibility is included in our self-consciousness as agents of decision. Such awareness or, as S. Alexander would have it, "enjoyment" of our own subjectivity is an intuitive prelude to philosophical theory. It is certainly not the result of any dialectical argument, however subtle. It is, however, prerational rather than irrational in status. Thus, so acute a student of scholasticism as Jacques Maritain is willing to argue that an intuition of our own subjectivity affords an indispensable preface to human wisdom. He argues that our sense of subjectivity may be justified in Thomistic terms.

Subjectivity is not known, it is felt as a propitious and enveloping night. There is, secondly, a knowledge of subjectivity as such, imperfect and fragmentary of course, but in this instance formed and actually given to the mind, and which is thrown into relief by what St. Thomas calls knowledge by mode of inclination, sympathy, or connaturality, not by mode of knowledge.—Jacques Maritain, *Existence and the Existent*, pp. 70-71.

Maritain believes, however, that only in religious consciousness is our sense of subjectivity given fully adequate expression, where it is supported by a way of life and of thought that recognizes human personality not strictly as an object, but in the intersubjective relations of respect and love.

If it is to support a significant assertion of existence, our sense of active subjectivity must appear to us as free; that is, as manifest in a self-determining decision, which as such is *causa sui* and not *ab extra* committed to this or that alternative. Otherwise, we could not discern in our subjectivity a distinction between the possible and the actual. We would then be aware only of a system of actuality comprising a determinate past, present, and future, their detail largely beyond our ken, yet recognized as including our own subjectivity as a series of events. But our existential freedom is incompatible with a fully determinate future. The future relevant to our self-determination must in some measure be unsettled and, so to speak, perforated with open determinability, the shifting void in which volition moves. This void or field of our decision is grounded or limited by realized actuality, yet it is still open to determination. It is the theater of our concern, practical and moral. As such, however, it need not be interpreted as something intrinsically dreadful, nor need our position with reference to it be considered as a desperate predicament. Indetermination may, indeed, offer an exhilarating prospect and be joyfully accepted, as by William James and even by Bergson. Thus many European existentialists shudder at what has delighted other thinkers. Herein lies a fascinating problem of contrasts. Existentialism, like Christianity itself, is capable of many moods.

So conceived, the world order, of which there is happily but one, may be described as a pluralistic or many-centered universe, subject to no single act of determination comparable to that of Leibniz's God. Such an existential order is infinitely richer at each moment of its life than any Leibnizian system of compossibility, route, or locus of events. For at every moment of creaturely decision a world

of concrete realization is brought into contact with manifold possibility. The excluded alternatives still qualify and characterize the decisive events—and our history is so much the richer. Existence is colored by the possibilities it has rejected. The actual world, with its many centers of decisive action, carries with it an infinity of unrealized possibilities, present as such and contributing to the value of the whole, so that our histories read in retrospect as a series of decisions, not as strings of events. These decisions retain, even when considered in historical retrospect, their status as prehensions of possibility. They are moments of becoming and not terms in a series.

Bergson has clearly seen the relevance of the rejected and he has exploited it in his ingenious theory of the poetic imagination at work in tragic drama:

How, indeed, could the same man have been Macbeth, Hamlet, Othello, King Lear, and many others? But then a distinction should perhaps here be made between the personality *we have* and all those we *might* have had *Our character is the result of a choice that is continually being renewed*. There are points—at all events there seem to be—all along the way where we may branch off, and we perceive many possible directions though we are unable to take more than one. To retrace one's steps and follow to the end the faintly distinguishable directions appears to be the essential element in poetic imagination. . *Poetic imagination is but a fuller view of reality*. If the characters created by a poet give us the impression of life, it is only because they are the poet himself—a multiplication or division of the poet—the poet plumbing the depths of his own nature in so powerful an effort of inner observation that he lays hold of the potential in the real, and takes up what nature has left as a mere outline or sketch in his soul, in order to make of it a finished work of art.—*Laughter*, trans. by Clouesley Brereton and Fred Rothwell, Macmillan, 1911, pp. 166-68. Italics added except for the first.

In such a world as this which the tragic poet contemplates, human creatures are in contact with an indeterminate but determinable order of possibility and capable of decisive self-realization. Thus human beings appear as full-bodied images of their creator, not

mere shadows of his will like Leibniz's "spontaneous" Adam or Sextus, who "freely" live out the lives assigned them in the deity's providential logic. Their existence is their freedom. Here we need not turn to James, Bergson, or Sartre, for authority, but to recent utterances of neo-Scholastic writers who in developing the medieval notion of the "act of existence" have drawn Thomism and existentialism toward one another.

The radical newness of truly free acts, that fundamental character which Bergson has so remarkably brought to light in his analysis of free will, has its original source much less in duration itself than in the very act of existing, by which enduring things themselves endure. Things are not because they last, they last because they are, and, because they are, they act.—E. Gilson, *Being and Some Philosophers*, Pontifical Institute, Toronto, 1949, p. 83.

Such action is the very substance of things—of a many-centered world ever in the making, a world whose quality is manifest in its negations and exclusions as well as in its concrete realizations.

Returning in conclusion to Leibniz, let us note that such a world of freedom and choice, in which creative freedom is, so to speak, incarnate, far surpasses any of the possible "worlds" or loci of the *Theodicy* in intrinsic excellence. We hardly conceive of God as willing to limit himself to so pedestrian a mode of self-expression as that described by Leibniz. After all, the best of all possible Gods would certainly not consider Leibniz's game of possible worlds worth the playing. He could, one may suppose, play such a game, but as the supreme existentialist, whose insight surpasses that of the great tragedians, we may assume that he would be bored with the result.

»» CHAPTER 7 ««

The Methods of Philosophy

THE PROBLEM OF METHOD

To determine the method that philosophy should follow is itself a major philosophical problem. Its importance is shown by the close agreement in structure and content of those systems of philosophy where a method is derived from the same motivating notion. Both basic notion and associated method are relatively invariant within the families of philosophies that have been identified in the previous chapters. But different families of philosophical systems advocate different methods, and this is peculiarly tantalizing because each can show experimentally that its own method is one that does in fact resolve fundamental problems.

The existence of such alternative methods can be traced, at least in part, to the genesis of philosophy. The ideal of human knowledge is to see the detail of nature and of human life as wholes, in the light of basic unifying principles and laws. This ideal is first approached in sciences that find such unity in one aspect or part of the world. Natural science, for example, discovers basic laws and properties of inorganic phenomena, and aesthetics discovers certain common properties and basic laws in works of fine art. The natural thing to assume is that nature is sufficiently homogeneous so that principles that show us the unity of a significant realm can be extended and will prove the key to an understanding of the universe and human experience as a whole. We can easily imagine possible universes in which such an extension is easy, and produces this

desired result. Each of the types of philosophy we have considered seems in fact to begin with insights into some aspect of the world, then to proceed by extending the methods and categories found best to explain this aspect to include the whole of things.

But the universe in which we live is clearly not of this simple type. When we try to test philosophies by comparing them with experience, our first observation is likely to be that certain notions are almost completely dominant in certain fields of action and thought. Thus pure mathematics has uniformly operated as though the "diagram" notion were philosophically correct; for in the "part" of the world that the mathematician studies, this philosophy is peculiarly adequate in its explanation of the "facts." But just as uniformly, aesthetics employs the notion of "creation" as being peculiarly well fitted to describe the work of the artist. (However, the analysis and the criticism of works of art already completed may also be described in terms of the notion of organism, if the critic concentrates on the final product and not on the creative process.) The notion of the specimen reigns in medicine and the biological sciences (except in certain border-line areas, where it adjoins the model at one extreme and the diagram at the other). The model approach is the only one that seems to give desired results in technology, and for the realm of invention, mechanics, engineering, and the design of experiments in science it cannot be replaced.

Thus every one of these positions can claim superiority to the others in its explanation of some part of experience and can demonstrate its claim. We cannot, consequently, resolve the problem by "appeal to the facts," to see which method fits best; each has its own region of peculiarly close fit, and each has areas where it shows less success in application. A further objection to the attempt to "appeal to the facts" is, of course, that each notion will carry with it its own definition of what "facts" are. For that reason, the experimental evidence as to which orientation fits which facts best was presented, above, in historical form; for example, the consensus of professional

mathematicians was taken as a guide in determining what sort of "facts" mathematical facts are.

Perhaps, however, each method can be treated as the result of "abstraction" of some aspects from a concrete world where *all* the basic properties are copresent, and all the basic methods apply. This is an evident line of explanation, but presently we find ourselves admitting that if all these dimensions are present in all parts of the world, it must be possible to superimpose our four divergent philosophical pictures and thus compose a new, more adequate philosophy. On trying this, the reader will find that so long as equal weight is given to each of the philosophies, the result of superimposing all four is *not* a concrete entity, but a complete blank. For the result contains equally dominant contradictory properties of every description, and in such a field there is no coherence or consistency.

One might be led by these considerations to decide that philosophy as conceived above—that is, as knowledge of the world as a whole—is quite impossible. Though we are able to find common unity and principles in various parts of reality, this does not of itself prove that we can do so for all parts viewed together, but only suggests such a synoptic view of things as a kind of hope or expectation. In defense of this negative conclusion, it might be said that the past disagreements of philosophers have not led to any progress at all in philosophy, because each begins committed to a basic notion and method, and "refutes" other points of view simply by showing that they differ from his own.

Surely, such a conclusion would be too dogmatic, and could not be demonstrated. The situation is rather like the problem of "location" treated in Chapter 4, where the desk and the observer's mind were "both in the same place at the same time." The problem there was to avoid interpreting this in such a way that it *simply identified* the mind and the desk. The resolution was to distinguish "centers" and "perimeters" of location, so that the various aspects of the desk, spread through space, centered about a hypothetical point of maxi-

imum intensity, the desk's "central location." The superimposition of "the desk" and "the mind" was then construed, not as simply placing the one *center* on the other (for the observer knows very well that the desk is not a part of his identity in the way his habits or body are), but as an overlapping in which each was present with an intensity related to its distance from its "central location." In the same way, trying to superimpose philosophical methods by assuming each to give an equally adequate picture of *every part* of reality produces contradictions, but it seems sensible to think of various "distances" between classes of phenomena and schemes of explanation. It would be said that the demonstrated possibility of extending the atomic or organic theory to explain the whole of things proved that every part of nature was *to some extent* both organic and atomic. But it would be suggested that an animal, for example, is a kind of natural thing located near the center of the organic realm of nature, and more distant from the center of the atomic realm. In other words, there is an "overlapping" of atomicity and organic unity in the animal, but the unity is much more intense, and emphasis of it will provide a method of explanation that is more adequate. This view allows us to defend the possibility of philosophy and suggests a way of selecting philosophical method, at the cost of admitting that no single notion will do equal justice to all facets of reality.

One piece of evidence which seems to show both that philosophy is possible, and also that something like the present view of a scale of applicability of philosophical methods is true, can be found in closer examination of the disagreements of past philosophers. If nature were in fact radically discontinuous, and different systems of philosophy merely put forward flat, unproved assertions of a continuity that their principles explained, it would follow, as was suggested above, that disagreement between philosophers would consist simply of verbal contradictions. Either two systems would be mutually unintelligible or each would judge the other "wrong" because it was different.

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In fact, however, what has happened has not been such an empty crossed monologue of charges and denials, but something else. Each philosophy has had its attention directed to new problems within its own principles when it has been criticized from the point of view of another philosophical system. The philosopher of organism, for example, might remain content with a small number of definitions and sharp distinctions if the Platonist or artist did not keep asking him for his explanation of various border-line cases. While such questioning does not convert an Aristotelian or a Kantian into a Platonist or a Leibnizian, it does force him to clarify and extend his own explanation. In the same way, the artist's questions pose new problems for the atomists, and conversely. This interaction has led, not to empty debate, but to extended exploration and clarification, which do in fact, as we look at them over a period of two thousand years, constitute a history of "progress" in philosophy.

PHILOSOPHY AND TECHNOLOGY

The particular way in which we have approached philosophy, as a speculative enterprise stemming from and coloring ordinary imagination and experience, would suggest another problem, even if recent work in politics and sociology had not already raised it. What is the relation of the social life and the technology of a period and community to its philosophical attitude? Marxist theorists and some non-Marxian sociologists seem to feel that there is a one-way causal connection. new institutions and techniques force us into new speculative ventures. But intellectual historians and cultural historians often make equal sense of history by interpreting the relation in just the other way: specific institutions and techniques express only a basic way of thinking already latent in a culture.

The way of approaching philosophy in this book as deriving from application of methods proper to key "notions" takes a mediating position. On the one hand, the quality of experience in a society suggests these notions and provides an opportunity and a motive for developing them. But the construction of a philosophy is sub-

ject to a double set of controls; the notion is not enough. There is the consideration of consistency and comprehensiveness of explanation, which dictates certain standards to the speculative thinker, and there are the properties of things which must be integrated into his scheme. These factors are not relative to culture.

In their reciprocal action, philosophies, by influencing "common sense," lend basic methods or categories to technology and society. At the same time, the patterns of a culture, both those of its institutions and the more homely designs of the everyday artifacts it produces, act to reinforce or minimize the extent to which common sense will accept and emphasize one or another of the key notions we have been tracing. As either factor changes, a new resultant is produced; these two aspects of human history are therefore not so related that one is cause, the other effect, but in such a way that each is causally related to the other.

We may find it a very suggestive way to study speculation and social change if we think of "common sense" as an outgrowth of inherited philosophical modes or categories of explanation, selected by the frequency with which they clarify the firsthand experience of a given person in a given culture. For some persons in some fields, given modes seem to persist. thus, in every period, mathematicians will gravitate toward field concepts, artists toward creation concepts, as the kinds of explanation that most often fit their day-to-day experience, as was remarked above.

As a brief illustration of this sort of thinking about technology and common sense, let us trace three stages in the past two centuries of technological change. Two centuries ago, the last word in precision equipment was clockwork mechanism. The watch or clock, which figured earlier in many philosophical analogies, is a fine embodiment of a mechanistic idea. The separate parts can be observed and detached, we can see how they move each other around, and a remarkable degree of usefulness and precision is attained by the relatively simple external relations of parts in contact within this mechanism. In designing other machines, the same ideas of

mechanism were employed. The implications for common sense seem obvious: proper attention to design and distribution of energy among separate material parts seems the clue to constructive invention, whether of social institutions or of machines.

The advent of new power sources, however—particularly that of electricity—created an everyday world in which familiar objects reinforced the field, not the element, theory. For a time, electrical equipment was quite obtrusive in its dependence on the “flow” of current, which could be traced through the mechanism (as in early unglazed electric-light bulbs, where the filaments provided a vivid picture of lines of flow; or in the overhead telephone and power lines, a constant reminder of the complex current-fields functioning in a town or a city). This sort of environing artifact made a field viewpoint conform very well to much everyday experience, and deflected common sense in that direction.

Because of a time lag in common sense, we still see effects of the imaginative world of fields active in popular speech and thought. But technology has moved into a new style, with power lines concealed, and mechanical units, such as stove switches or refrigerator motors, installed as sealed-in blocks (a tendency in design that today even extends to children’s wind-up toys). These “units” are not taken apart, but replaced, when they stop working. The imaginative effect is that of a new kind of atomicity, but with “atoms” that have infinite variety and engage in all sorts of “creative” functions through concealed inner causes, the nature of which remains a mystery. The prospects of atomic energy, generated in highly insulated lead reactors, may soon carry us further in this direction.

One would expect the result of the “clockwork” world to be a common-sense attitude in which other people and society were graded on efficiency and punctuality, and seen as sets of interacting separate mechanisms. The “field” common sense, on the other hand, would tend to make one visualize people and society on a broader and more flexible scale, so that “cultural forces” would be recognized by any “sensible” man as constitutive of individual personality and

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performance. The third phase is reminiscent of our Roman poet who wrote an ode to the slot machine: magic and creativity seem to surround us, and any sensible man must recognize their presence. Existentialism seems reasonable to us in its appeal to unique inner experience of a creative kind, which is the very quality of man. Thus the contrast between our fellow persons and the items of the world about us that have no inner mystery, but only a hard surface, is constantly brought to our attention.

Our compass of philosophy can, perhaps, also be used, in the way these brief suggestions illustrate, to state and resolve the problem of the interaction of technology and philosophy in the formation of the common sense of a period and a society, a problem to which neither economic determinism nor the history of ideas holds the full, balanced resolution.

THE NATURE OF GOD

In each of the approaches to philosophy oriented about the cardinal points of our compass, the concept of God has a place. The place given God depends in part on the view of the world over which he presides, and in part on the view of the method by which the nature and the existence of such a being can be determined.

For the model-builder, three interpretations have been given. If the world is a vast machine, it may seem reasonable to extend the analogy of an engine to include some engineer. God may be thought of as the being who puts the machine in motion, having designed it so that it will run itself once its action is begun. This notion (roughly that of the religious position called "deism") has the advantage of explaining the initial impetus and the regular design of the world, and avoids the loss of closure to which pure mechanistic theory is liable by recognizing in the world itself two components analogous to the model and to the scientist who is its builder. At least, it transfers the difficulties of ultimate "closure" from science to religion, and provides a proper place for religion in its scheme of things. But the reader should note carefully that all that is said about God on

this view is that he is a mechanic and a first mover—and the only place provided for religion is to answer one final question; once the world is created and in motion, its operations proceed with mechanical inexorability. Further, the element of “design” that God creates is limited to the basic laws of atomic physics; these are perfectly regular, and are all we can discover of a divine plan in nature.

Perhaps more consistent with this general point of view, though even more limited in religious value and significance, is the position taken by some of the Roman atomists, that there are gods, but they are material. Since people claim to have seen such beings, the classical materialist may admit their existence; but he conceives them as made up of atoms, like men, as living “between the worlds where no winds blow,” and as quite indifferent to cosmic or human destiny. Our materialist in this tradition may be led, by reports of people who have “seen” supernatural beings, to grant a God or gods existence, but it is an existence with no significance; in the same way, some twentieth-century persons might grant the existence of spirits or ghosts, but without attaching any great importance to them.

Finally, a mechanistic materialist who is interested in the operations of the mind may suggest a mechanism by which the concept of a “God” is formed by imagination from the materials of our everyday experience. Such a concept, he may suggest, is simply a magnifying by the imagination of such properties as intelligence and power, which we find that men have; there is no thing answering to the concept except such ordinary experiences, which the human imaginative mechanism has magnified. On this view, God has neither significance nor existence, except as a fiction. Indeed, the philosopher holding this position may claim that we have no concept at all of a God who has the attributes traditional religion gives him: the resources of language make possible verbal combinations of superlatives into phrases that describe combined properties we cannot conceive. We are conditioned to “believe,” that is, to respond in a certain social and emotional way to these phrases;

yet because of their lack of any object as referent they are "meaningless" or "empty."

Strictly, of course, his method should limit the model-oriented philosopher to granting the existence of a God only if: (1) we have direct observation of him, and (2) we can build a model of him. For a God transcending space and time, neither condition can be realized, and the existence of such a being should, therefore, seem meaningless. If people report observations of deities, we must either incorporate such beings in our models of nature, giving them location and embodiment, or we must admit more complex models of the observer that will account for the error assumed to lie in reports of this kind. But even if, recognizing a lack of closure in his system, a philosopher of this orientation admits a God to achieve closure, it will be a God conceived in the image of the model-builder, who designs a world that runs purely mechanically, and introduces beauty and value into it only by ensuring a perfect regularity of the laws of impact governing the mechanism. Such a God does not fill the religious need of most thoughtful and sensitive people.

In philosophies oriented to the key concept of organism, three different interpretations of the nature and the existence of God have appeared. If our knowledge represents insight into things in themselves, and if nature as a whole is a constant theater of possibility passing into actuality, science requires us to take as axiomatic the existence of a God who is a cause of the continuity of process. For the world we live in is actual, not merely possible; and a chain of possible causes, however long, will never terminate in an actuality. This means that there must *be* something that is completely and permanently actual, itself the cause of the emergence of an actual world as opposed to a merely possible one. This first actuality is God, or the Prime Mover. The existence of God, on this view, is not simply a possible postulate to secure closure, nor yet a fiction of the imagination's devising. The argument that actual effects will not result from a chain of merely potential or possible causes is valid, and the existence of some prime actuality follows as a principle of

science. Indeed, we might, within this philosophical tradition, argue that when the materialist assumes that the future will resemble the past, and that there will actually be a future of some kind, he should admit the existence of God in addition to that of atoms and the void. But even by this argument from possible to actual, the attributes of God and his role in nature are stringently limited.

It is necessary to deny that the first mover is capable of change, for all change depends on antecedent possibility, and our argument has shown that the first cause must be purely actual—otherwise, we would have to ask what prior actuality moved God to realize his possibility for change. If he is purely actual, however, God cannot have knowledge of a world of many changing material substances, for such knowledge requires an interaction of sense and imagination with understanding and reason, and sense and imagination require a passive matter for their existence.

The resulting concept has sometimes been called a “scholar’s God,” who, as it were, goes into his study, away from the world, and closes the door. Such a God may be necessary to explain the existence and the continuation of an actual world, but he cannot explain any of the multiplicity and individuation we observe. As a remote final cause, we may say that God is responsible for a “conservation of actuality,” but for the philosopher of organism, it is the “immediate,” not the “remote” causes of a thing that give us our clearest knowledge of it. God does not in any way depend on the world, nor does he act on it in a manner that explains any of the detail of nature, nor does he know it except insofar as he may know forms that are eternal and actual and thus like himself.

If, however, we build a philosophy of this type on the more limited assumption that science tells us only about things as phenomena—that is, as objects of human experience, not as they are in themselves—we clearly cannot reason from our subjective forms of thought to any objective first principle of science. The existence of God, so far as phenomena are concerned, is only problematic: we have an idea of a cause of unity and actuality behind phe-

nomena, but no way is open to us of proving the objective existence of such a cause. Or, put in another way, the idea is of such a kind that God cannot be the object of a possible experience; but it is only through experience that we can arrive at scientific knowledge of a thing's objective existence. On the other hand, if we did not believe that there is any basic cause of unity in nature, the whole enterprise of scientific inquiry, which is a search for such unity in our experiences, would be pointless. So, indeed, would our conviction be that there is some natural and proper end for man, upon which moral imperatives are rationally based. In practice, whatever our abstract arguments, we always act *as though* there were an intelligible order in nature, and *as though* we were free moral agents in a world where some things ought to be done because they further human dignity. Consequently, God appears in this type of organism-oriented philosophy as a postulate of practical reason, not as an axiom of pure or theoretic reason: as a being in whom we may disbelieve in theory, but whose existence we cannot avoid assuming in practice.

For the critical philosophy oriented toward statements rather than concepts or things, we would expect God to appear as a necessary postulate of language. Without some basic principle of order, some first undefined and basic term itself entering into the definitions of our other terms, no systematic statement of a philosophy would be possible. Ordinarily, however, a philosopher in this tradition will not use the term "God" to refer to his first principles basic to logic and grammar, though to be sure in the earlier literature devoted to speculative grammar and philosophical logic this was often done.

For the philosophical position oriented toward fields and patterns, the philosophical role of God is a considerably more important and complex one. In addition to the need for some pure actuality if there is to be a world at all, there must be some principle of order among the eternal forms, and some principle of concreteness by which these forms are embodied as concrete instances in the fields of

space and time This final condition seems to require a creative, dynamic action, which cannot be referred to a static eternal object, nor to the unordered oscillation of a pure field. In the early Greek version of this approach, it was argued that a God who brings order into nature and creates copies of forms cannot possibly be an eternal form himself. The distinction was made between God, who was conceived on the analogy of a craftsman, and the forms, which served as blueprints for his creative work. Among the forms, the form of the good or the form of unity served as an ultimate principle of order. Evidently, God the craftsman cannot be wholly outside of the medium in which he works, nor can he be conceived as omnipotent; for the existence of evil must be explained by the recalcitrance of the medium. He can be omniscient, except insofar as the failure of matter to retain the forms imposed on it interferes with exact realization of his structural plan.

In later Christian theology, the concept of God is made to combine (1) the status as "pure actuality" of a Prime Mover or the transcendent ordering principle of the Platonic forms (which are reinterpreted as "ideas in the mind of God") with (2) the role of creator or craftsman that the earlier Greek thinkers associated with God, and (3) the attributes of knowledge and power carried to a maximum. The result of this more complex and comprehensive conception, incorporating the ideas of all the earlier philosophers (except for some of the atomists' theories), is the Christian God, who is conceived as three Persons united in one Godhead. The doctrine of the Trinity is, in part, an expression of the earlier religious insights that combined to form the more complex Christian idea of God. In very general terms, the Persons of the Trinity represent God as a creator and sustaining cause of the world, as a designer responsible for its rationality, and as a presiding power operative in its history and immanent in all becoming. God thus seems to combine the ideals of each of our four diversely oriented systems of philosophy: he is able to understand a total order of things that human thinkers can see only partially and in obscure outline.

In philosophy proper, as distinguished from religion, the function of God has usually been (1) to ensure that the world is rational, so that men can understand it, and (2) to ensure that the order of the world can be explained at the same time by reference to laws governing mere physical fact and to principles of aesthetic and moral value. There has been extensive discussion, and disagreement, as to how and how far the existence of a God serving these functions can be proved or known. We can appreciate this if we recall that different systems of philosophy are operating with widely different images and concepts of the nature of the world and of man.

But every philosopher, of whatever orientation, holds the belief that knowledge of the world is possible, and that value is relevant to fact (we have noted that even the most radical atomist claims that the facts are best described by the theory he judges to be the "best" explanation). Further, many philosophers believe that the disagreement of systems of philosophy can be resolved and explained, either by analyzing or synthesizing the facts into larger or smaller units of explanation, or by making careful distinctions of frames of reference in which discussions are carried on. The continued human interest in the problems of philosophy, which sometimes explicitly centers about the existence and the knowability of God, sometimes about languages or atoms, has as its basis therefore certain beliefs shared with religion.

Although optimistic philosophers and theologians, recognizing this common basis, have sometimes argued that one of the two, religion or philosophy, could absorb and supplant the other, the relation of philosophy to common sense and to concrete experience, as discussed in the present book, would indicate that there are basic differences between the philosophical and the religious enterprise, and that, to be effective, each must be separate from, though supplemented by, the other.

TOWARD A FINAL SYNTHESIS: INTUITION AND THE
PROBLEMS OF PHILOSOPHY

Philosophy, we have said, is a pursuit of wisdom—even of vision, if by vision we mean something other than the inexpressible illumination, the “deep and dazzling darkness” of the inspired mystic. Our survey of the methods of philosophy, the “ways of knowing” upon which the philosopher must rely, has not opened for us a single or synoptic vision of the world. Perhaps, we might say that our survey has failed by offering us too many visions. We are confronted with a fourfold reality and we stand silent in embarrassment if we are asked to synthesize or unify the several alternative landscapes extending before us. This is an unhappy situation. We may admit freely enough that there are several ways of interpreting our world, but we are disturbed by the thought that there are several worlds or even wholly distinct schemes of order within the one world. Philosophers have at times acquiesced in such a situation, as when in the Middle Ages the doctrine of “two truths,” one theological and the other philosophical, was considered by a few as a possible, if a difficult, solution. Indeed, we are faced with more than two “truths”; mathematical order, mechanism, organicism, and creative freedom seem to be jumbled together in a world system that may appear to some students a bit too tolerant or too ambiguous to be plausible. At this point, we must admit that the last word may, after all, lie with the skeptic or the mystic. The ultimate unity of things, if indeed there is any, may lie beyond our grasp or may be available only to a mystical insight that defies our efforts at adequate paraphrase in verbal form. Perhaps, the skeptic may suggest with a smile, only a mystic would undertake to grasp the total scheme of things—and perhaps the mystic, who sometimes has, paradoxically enough, a gift for dialectic, will reply that our very insistence that there is one total scheme of things is an afterglow or a faint reminiscence of mystical vision.

Finding himself in such an embarrassing situation, the philosopher

may be tempted to force the issue by dogmatically declaring in favor of one of the speculative possibilities, if only to dispel the aching void of uncertainty. Thus we have in recent years heard frequent and rather too complacent reference to something that is known as *philosophia perennis*, everlasting or perpetual philosophy. This is usually supposed to be Platonic idealism, or a refurbished Aristotelianism; and certainly we must admit that these schools of thought are of a stubborn variety which can endure transplanting. But there are dark moments when the only thing perennial about philosophy seems to be its unfinished business, its portfolio of unanswered questions. And surely it is not owing to mere oversight or mere miscalculation that these problems remain unsolved. It is this latter recognition that prepares us for radical skepticism and tempts us to declare the persistent problems of philosophical tradition to be meaningless, primarily because their solutions are not subject to verification in terms of sensuous data. To be sure, we will in this way avoid much embarrassment; and for many thinkers this complete break with a perplexing tradition has been the source of an exhilarating sense of freedom. But we must pay a ruinous price for any such triumphant peace of mind, for to maintain this standard of certainty requires us to shelve almost all traditional philosophy, including, as we have seen, ethics and value theory in general. On the other hand, perhaps the most persuasive consideration in favor of this thoroughgoing skepticism is the observation that even traditionally minded philosophers hardly ever solve problems—certainly not the great problems which stand as landmarks in the history of thought.

Indeed, these puzzles become famous partially because they continue unsolved. Such a problem often constitutes an impasse that subsequent thinkers carefully plan to avoid, as, for instance, Leibniz and the Occasionalists strove to avoid having to face Descartes's interaction of body and mind, while still maintaining that everything happens as if this interaction actually took place. This procedure may be described as a rerouting of argument in order to

avoid difficulties. It is not necessarily invalid. But it often raises more problems than it solves; and its chief danger lies in that when avoiding difficulties we often do not penetrate them, and thus we may be said to leave unsubdued territory behind us. Conquests made in this way are almost always unstable.

Thus the upshot would seem to be that traditional academic philosophy cannot solve the great problems with any finality, and further, that it can hardly ever avoid them with impunity. This situation, although very familiar, is nonetheless desperate and calls for radical measures. We cease to feel this vividly only because despair has become chronic and in itself constitutes a sort of philosophy. But under these circumstances we are not free to dismiss any proposal that offers a possible method of reaching positive conclusions. Let us then consider a method that is, on this side of the Atlantic at any rate, still considered most questionable and which has often been dismissed as patently contradictory—Bergson's philosophy of intuition, in which we are invited to solve by inspection problems that baffle the algebra of the logician. Reason is here held to distort reality; intuition, or we might say metaphysical observation, is alone capable of dismissing the problems that reason, shortsighted and conscientious, is always accumulating. To be sure, in the recent past it has been easy enough to "refute" Bergson. He cannot avoid leaning upon reason at times and thus, of course, he undermines his own philosophy. His frequent citing of scientific conclusions in his own defense illustrates this. Again his philosophical essays are not in themselves records of one sustained intuition. At best they are made up of many moments of intuition woven together by a discursive argument.

These and similar difficulties were pointed out again and again in the days of Bergson's first great popularity, but they never wholly silenced the Bergsonians, for the reason that Bergson himself had made some allowance for them. He often spoke of the complementary activity of reason and intuition. Intuition was said to hover behind reason and to correct or temper its excesses. Bergson has

often described this fringe of intuition which accompanies intelligence and restrains it. Now there is no doubt that intuition can and often does restrain discourse. Let anyone argue from the mechanist hypothesis concerning life and he will find that an intuitive awareness of living things lingers behind his reasoning like an unhappy ghost. But to emphasize this relation between intuition and reason is not to reveal their most fruitful mode of co-operation. We should not limit ourselves to describing one as restraining the other. It is far clearer and more accurate to speak of an alternation from one to the other, a sequence of thought that passes through both discursive and intuitive phases. And in connection with this we must temper the common Bergsonian criticism of intellect. Reason falsifies only when it proceeds without having at certain critical moments recourse to intuition. The great traditional problems represent crises in which reason must call upon intuition for aid. When the nature of these crises is not understood, when reason calls in vain for aid or when it insists upon trying to help itself unaided out of its difficulties, philosophy presents a sorry figure and often loses much of its prestige.

There are times when intuition and intuition alone can save philosophy from triviality, but this sheer metaphysical inspection cannot by itself support philosophy. Intuitive description is indispensable in the solution of certain problems, but it cannot state problems or detect difficulties. So long as intuitive description advances freely there are no difficulties. The latter are always in some way the product of extrapolation when deduction is expanded beyond a firm nucleus of insight. But difficulties can be dispelled by re-establishing intuitive description upon the problematic frontiers themselves.

Such description must be invited by reason, and when it is completed reason must know where to place it in the fuller scheme of things. Reason must elicit intuition and superintend its exhibition—so to speak, its publication—so that its significance shall be manifest. Thus reason must determine the relevance of any given intuition to

the universe as a whole, for except in barest outline the universe as a unitary whole stands beyond the grasp of intuition. Intuition is accordingly not apt in orienting itself. As the psychologist Jung has pointed out, the man of intuitive gifts is sometimes a crank, and it is certainly true that intuition is not self-critical.

Bergson sometimes insists that the intuitionist merely describes what he sees, and that this is true even when he looks at so complex and bookish an entity as evolution. It is this failure on Bergson's part to limit intuition that gives his philosophy, at least at certain moments, the air of irrationalism. Having called upon intuition, reason must judge intuition's contribution. This does not mean that reason passes judgment upon the validity of intuition, but that it determines clearly just what aspect of the world it is that intuition has succeeded in describing.

Genuine intuition is never false, but the description that it offers may be directed by reasoning toward too wide a field, and the result of this is confusion and error. Furthermore, intuition by itself can never prove anything false. Intuition can aid reason in denying a hypothesis, but by itself it cannot constitute a refutation. We might almost say that intuition stands to philosophical reason somewhat as sensation stands to perception—at least in the sense that intuition, like sensation, can by itself never be false. On the other hand, there is a marked difference, in that intuition, unlike sensation, is a synthesis of readily recognizable elements.

Judgment concerning intuition is reason's last and highest function in philosophy. But the most critical moment in the development of a philosophy occurs when reason must first step back and leave the success of its plans to intuition. Indeed, until intuitive description has appeared on the scene reason has no plans but only ambitions, which may prove quite barren if intuition is not forthcoming. The emergence of intuition owes its origin to philosophical genius, whereas reason's final comment, although the last word in philosophy, does not require genius but only intellectual sobriety. This point is important to remember when we consider Bergson's

habit of describing philosophical intuition as suprarational. It is suprarational insofar as it is much more rare than the "good sense" of the Cartesians. But it is not suprarational in the sense that it can afford to dispense with that intellectual judgment whereby we give or withhold assent to propositions. If we dismiss such judgment, intuition becomes purely aesthetic and enjoyment takes the place of cognition.

At the critical juncture when intuition first asserts itself, the philosopher's problem is that of communicating intuition to his readers. Here the choice of terminology is often important. It becomes the function of certain words and phrases to communicate intuition, or perhaps we should say to challenge the intuition of the student. So Plato invites us to grasp the relation of form to flux and urges an intuition upon us. The word "participation" need not be interpreted as an explanation or even as an attempt at explanation. It is a request for intuition, an intuition that Aristotle never accomplished. As Plato tells us in his *Seventh Epistle*, the student of philosophy must achieve all essential insight for himself. This is true also, presumably, of Plotinus' term "emanation." The resulting intuitions, when they take place, are important because the stage has been so happily set for their entrance. But if we make no intuitive effort, the system will remain for us purely verbal, and we may join with Goethe's Mephisto, that most ingenious of shortsighted philosophers, in the complaint

Denn eben wo Begriffe fehlen
Da stellt ein Wort zur rechten Zeit sich ein.

Thus just when concepts fail us
There appears a word to fill the gap.

Mephisto's couplet well represents the reaction of the overcautious to a philosophy of intuition. And it is perhaps a weakness of exposition on the part of many intuitionists who, feeling that it is quite useless to attempt to force anyone to exercise intuition, often fail to make a continually repeated effort to arouse the intuitive powers

of their readers. Even Plato in the above mentioned *Seventh Epistle* tells us

Acquaintance with (philosophical truth) must come rather after a long period of attendance on instruction in the subject itself and of close companionship, when, suddenly, like a blaze kindled by a leaping spark, it is generated in the soul and at once becomes self-sustaining. . . I do not, however, think the attempt to tell mankind of these matters a good thing, except in the case of some few who are capable of discovering the truth for themselves with a little guidance. In the case of the rest to do so would excite in some an unjustified contempt in a thoroughly offensive fashion; in others certain lofty and vain hopes, as if they had acquired some awesome lore—*Thirteen Epistles of Plato*, trans. by L. A. Post. Oxford University Press, 1925, p. 341.

As Whitehead says, the aim of philosophy is sheer disclosure. But merely opening our eyes to our surroundings will disclose little. Only the veriest surface of things is available to awareness in this way. It is only after we have been made almost painfully sensitive by obvious error and our experience of self-contradiction to the distinction between appearance and reality that any fruitful disclosure is likely to be achieved. It is only, in other words, after reason has been awakened and a sense of the consequences or implications of propositions has been aroused that genuine philosophical intuition is possible. Intuitive disclosure often comes as the resolution of rational conflict. In the moment of intuitive description we pass beyond the more remote and secondhand statements of discourse.

In his *Introduction to Metaphysics* Bergson tells us that intuitive awareness of the stream of consciousness reveals a fusion of the One and the Many, the sort of thing, let us say, that Plato despaired of describing discursively in his *Parmenides*, but it is doubtful that Bergson, or anyone else, would ever have noticed this exhibition of unity in variety, or at any rate would have described it in these terms, were it not for the intellectual puzzles concerning the One and the Many which constitute so large a part of traditional philosophical literature.

Professor Hocking once said in a lecture:

We are ready to advance into a new era marked by the *rational use of intuition*. Bergson identified intuition with the irrational but it is now high time to dissolve the union. Intuition is the anticipation of rationality, which serves as a guide to induction; and its content is an awareness by the self of this world as a whole. Thus the kernel of advance lies in a pre-rational perception of a coming reason, in such a way that what we observe is ultimately to be our own.

To this we need add only that such intuition is frequently lost from view in the development of philosophical theory, although it meanwhile continues to enlighten common sense and to guide practice and even to influence the presuppositions of natural science. But usually a crisis is needed. An apparently insoluble antinomy can sometimes bring the philosopher to recognize the obvious.

The well-known American philosopher C. S. Peirce has dwelt upon the difficulty of noticing and isolating the obvious.¹ But he does not make clear that it is often an extraordinary conflict of ideas which helps to arouse our attention, just as the paradoxical outcome of Hume's philosophy dispelled Kant's dogmatic slumber and urged him toward the isolation of what had been unnoticed features of our perception of the world.

Philosophical intuition cannot take place *in vacuo*. Intuition must have elements to work with and rational analysis supplies these. Intuition works with or from analytical constructs—frequently from conflicting constructs, involving them, we might almost say *dissolving* them, in the texture of the concrete order of things as it appears to our direct and immediate observation. Without a guiding intuition analysis is frequently thwarted; without preliminary analysis intuition is usually trivial and superficial.

Some may suppose that this metaphysical description is nothing more than a framing of a hypothesis upon the basis of a more or less arbitrary guessing, a tentative combining of the various possibilities of doctrine present in the problematic situation. Much philo-

¹ *Op cit*, Vol I, pp 241, 134.

sophical thought does proceed in this way, but not the thought that measures itself against the great problems. If these latter could have been solved by an experimental recombination of elements, they would never have earned their formidable reputation. Indeed the relation of reason to intuition is very probably an example of emergence. Consider the following comment by the late S. Alexander

The emergent quality is the summing together into a new totality of the component materials. Just in this way, as our thoughts become more and more complex, some new conception arises in the mind of a discoverer which brings order into the immense tangle of facts and simplifies them and becomes the starting-point for fresh advances in knowledge.—*Space, Time, and Deity*, Vol II, p. 70.

But this emergence, the creative aspect of intuition, is still a matter of cognition. It finds as often as it produces. A new way of knowing has been created, but it is a way of "knowing" which does greater justice than heretofore to an already existent field of objectivity.

In order to illustrate the operation of intuition and its relation to reason, let us consider two traditional problems and notice the way in which intuition "solves" or transcends them. The important intuitions involved will be briefly indicated, but of course here no attempt will be made to review all the grounds that reason must consider in passing judgment. For convenience, let us think of these problems as the Platonic problem and the Cartesian problem; that is, the problem of the relation of form and flux and the problem of the relation of mind and body. These two problems—which turn upon the two great "dualisms" of traditional philosophy—should be considered in intimate connection, and neither should be lost long from the view of a speculative philosopher.

For common sense, and indeed for most philosophical theory, mind and body stand in spectacular contrast. The mind of the student or of the man of affairs seems to move about in space and time and to comprehend a world within which his body remains, so to speak, earth-bound and time-bound. We are all in thought wanderers in astronomical space and Yankees at the Court of King

Arthur, and we all anticipate the shape of things to come. We may even desert the actual order of events and, in Utopian contemplation, recast the scheme of things entire. Thus it is hard to think of the mind as finally compatible with the workings of a machine or even as the function of an embodied organism. On the other hand, to be sure, our minds are at the mercy of the material conditions that our bodies inherit. No philosopher can speculate long on an empty stomach; even the mystic must eat. But the precise relation of thought to organism is obscure, as we learn when we ask, perhaps rashly, "Just where in our bodies does our thinking take place?" Again, our dreams seem to "take place" in a time and a space of their own, so that primitive peoples think of the dreamer as leaving his body.

The relation of mind to body—even the comparison of one to the other—has been a source of perennial bewilderment. This is especially obvious when we ask: How do mind and body come into contact or, as they seem to do, into intimate co-operation, as when our well-considered decisions initiate overt bodily actions or respond to some novel situation in our physical environment? Perhaps we should begin by assuming the likelihood of some common element or aspect and then seeking to bring this more clearly to light. After all, mind and body, for all their apparent differences, are both subject to change, albeit perhaps change of different kinds. For both of them the contrast of present with past and future has significance. At least two philosophers have emphasized this obvious fact and have tried to find in it a point of view from which to survey body and mind in their mysterious contrast.

When Leibniz defined physical matter as *mens momentanea*, or momentary mind, he opened the door to a new philosophy, although it was not until Bergson's *Matter and Memory* that this novel doctrine is made completely manifest. Leibniz's notion of mind and of matter deserves special consideration. *Mens momentanea* is introduced in the following passage of the early *Theoriae Motus Abstracti*... (1671).

No force (*conatus*) without motion endures beyond the moment except in mind. Now what in the moment is force, is in time the motion of a body: here appears the door leading to the true distinction between mind and body that has heretofore been explained by no one. For every body is *mens momentanea*, or mind lacking in memory, because *mens momentanea* or body does not retain a force beyond the moment—either its own force or that of another body opposed to it—*Die philosophischen Schriften von G. W. Leibnitz*, herausgegeben von C. J. Gerhardt, Berlin, 1880, Vol. IV, p. 230

Mind transcending the passing moment responds to the possibilities and alternatives of the future as the machine can never do.

This concept of mind as the transtemporal agency persists throughout Leibniz's later work, and is expressed in various ways.

The essence of such doctrine may be illustrated as follows: A conscious or "minded" organism approaches the material robot as a limit when it relinquishes its grip on past and future and lives simply in the present. This is to renounce choice that looks before and after. It is impossible for a living being quite to reach this limit, but that it can sink towards such an extreme is undeniable. By intuition that has been sharpened through reflection we may observe within ourselves the tendency to sink from mindful toward mechanical activity, as, for instance, when fatigue limits us to routine, when we repeat clichés by rote without distinction of phrase or choice of figure. Unenlightened repetition is the character of a soulless or unmindful organism. On the other hand, the activity of a completely enlightened organism would contain no repetition *as a substitute for choice*. What repetition it would accept would be chosen deliberately and for its own sake, as a poet chooses the routine of metrical structure. Thus the whole activity of such an organism would be "mindful." So Milton, under the guidance of neo-Platonism, writes:

.. time may come when men
With Angels may participate, and find
No inconvenient Diet, nor too light Fare:

THE COMPASS OF PHILOSOPHY

And from these corporal nutriments perhaps
Your bodies may at last turn all to Spirit.
Paradise Lost, Book V, ll 493-97.

Compare John Locke's treatment of this theme in the following passage, that some readers may consider hardly characteristic of him:

...it is worth our consideration, whether active power be not the proper attribute of spirits, and passive power of matter. Hence may be conjectured, that created spirits are not totally separate from matter, because they are both active and passive. Pure spirit, viz, God is only active; pure matter is only passive; those beings that are both active and passive, we may judge to partake of both.—*An Essay Concerning Human Understanding*, (1690), Book. II, Chapter 23, Section 28.

There would seem to be a point of view, perhaps an indispensable point of view, from which the world may appear as an interplay of creative forces. But we are still faced with the problem. How do these forces, including those which spring from our own decisions, stand in relation to the mathematical, mechanical, and organic features of their environment? Or to put it otherwise: Do the several notions or categories of philosophical thought lead us along converging paths that may be thought to intersect in a prospect of ultimate reality?

The living organism stands, it would seem, between creative consciousness on the one hand and a robotlike routine on the other. At the bottom we have mechanical repetition. On the next level a self-maintenance through a co-ordination of vital functions, such as breathing and digestion, and above that the transtemporal activity of creative consciousness and choice which makes contact with sheer possibility. Life can move toward decisive consciousness or toward unenlightened and repetitive habit. These three modes of being are not perhaps so sharply to be distinguished from one another as we may have thought. After all, mechanical routine, life, and consciousness, may appear as *degrees* of the same activity—of what certain philosophers have called the "act" of being that varies

in intensity. The act of being supports duration where something changes and something remains unchanged, permanence and change being intimately connected and qualifying the same subject. After all, only the permanent or the persistent can change. Without a perduring unity there would be nothing to change, but only a sequence of unrelated events. To move, to live, to choose are characteristic actions of one and the same enduring being—namely, “*myself*,”—existing as a conscious, living organism. “My” power of choice depends upon “my” mode of living and upon the state of “my” health; and these in turn upon “my” freedom to move about. Again in full consciousness “I” make choices that influence “my” health and the mobility of “my” body. Body, life, and mind may be thought of as intimately related features of one substantial energy. Thus soul may be spoken of as the co-ordinated function of the living body—so sight is the “soul” of the eyes. But we must go further and recognize that mind displays a power of initiative—a power that may direct the eye toward a certain object.

These considerations lead us to question the sharp contrast between mind and body, the so-called “dualistic” theory that for generations fascinated modern thought. Even further, these same considerations invite us to recognize, as at least a plausible suggestion, the hypothesis that reality itself is rich enough in content to support or validate the fundamental categories or notions of philosophical speculation. Thus the concrete reality of human life may be at once mechanical, organic, and creative, an ensemble of routine, co-ordination, and initiative. Any one of these phases may be made the center of our attention. It is the task of intuition to overcome the one-sidedness of more abstract or specialized thought and thus to give us some sense of the concrete fullness of reality. Let us return to the Cartesian paradox. This arises from the contrast of a body seen as a machine, spatially patterned and spatially located, with a mind that is not a machine or a *res extensa*, but a free, even a creative agency. From the strictly physical point of view, such a mind is nothing and is nowhere. It is a ghost haunting a machine, and

we come to expect that it is wholly illusory. How then can it co-operate with body or direct it?

Moreover, it must be confessed that *perception* and that which depends upon it are *inexplicable on mechanical grounds*, that is to say, by means of figures and motions. And supposing there were a machine, so constructed as to think, feel, and have perception, it might be conceived as increased in size, while keeping the same proportions, so that one might go into it as into a mill. That being so, we should, on examining its interior, find only parts which work one upon another, and never anything by which to explain a perception. Thus it is in a simple substance, and not in a compound or in a machine, that perception must be sought for. Further, nothing but this (namely, perceptions and their changes) can be found in a simple substance. It is also in this alone that all the internal activities of simple substances can consist.—*The Monadology*. . trans. by Robert Latta, pp. 227-29.

Now suppose that we see mind as choice and choice again as transtemporal, and further suppose that we envisage inert bodies as *mens momentanea*, the limit of attenuated choice. Strictly inert body makes no choice and therefore does not respond to a future or learn from a past. There is nothing about the body's behavior to account for which a knowledge of the past is required. The locus of the body's behavior is here in the present and hence strictly spatial. But a mindful organism in action transcends the present epoch. A future event is nowhere, in the sense that one cannot find it. Accordingly, if we describe body as *res extensa*, we must describe mental choice as *res supra-extensa* that has traffic with past and future. And a minded organism shares this characteristic so that its mind is "invisible" or not directly observable as occupying the present space of the organism. But mind and body are not wholly different things. Milton's body that becomes sheer mind and the mechanist's sheer body are ideal limiting concepts. In reality there are varying degrees of choice and freedom. Without *some* degree of choice, there is no substance, no permanence or continued identity throughout change. Persistence and endurance, for the simple

reason that they are not wholly momentary characters, exhibit an "act" of being, in however slight a degree.

We must note that in this procedure we do not rely entirely upon intuition. Intuition is supplemented by systematization, which is a discursive function. The original nucleus of intuition is offered to us in introspection as we observe our own passage from mindful freedom toward mechanical routine.

We should not think of intuition merely as overcoming problems or difficulties, although it is usually in this way that intuition is called into action. After all, intuition is essentially a vision of reality. It is not merely an exercise but a genuine step in the expansion of knowledge. Its ultimate object is the plenitude of being, whose wealth of content can be fully appreciated only by one who has witnessed its several departments in isolation. It is the unity of these so-called departments which constitutes the wealth of being, not a numerical or even a formal unity, but one that is similar to the unity of a great artistic composition.

The realm of Platonic forms constitutes one department of being, the restless flux of natural and historical process constitutes another. Everything intelligible has formal or structural pattern. What is purely ideal and does not *exist* is sheer form or structure. An existent or embodied form finds itself in a process and partakes of flux. When we consider a pure form in its relevance to a given area of process, we may call it a possibility. We constantly contrive to reconcile form and flux, and we do so in an unreflective way as we lead practical lives. Philosophy can restore this unity to the theoretical level only after outgrowing and discarding many incomplete visions of the real. Form and possibility on the one hand, fact and the tissue of the concrete world on the other, constitute together the framework in which action and its mental correlate, decision, take place in our everyday lives. The union of the One and the Many is, like life itself, mysterious only as an object of theory. In actual practice it is a commonplace, the universal commonplace by which we live. Every time a scheme of aesthetic or practical inten-

tion makes contact with the concrete ensemble of actuality and finds a local habitation—in short, every time something is made or created—the conflict of form and matter is brought to a practical and intuitively manifest solution.

We have already noticed that Plato suggests the possibility of an intuitive vision that he does not attempt to publish in any detail, and we have already granted that we ought not to expect much success in an undertaking that Plato has declined on prudential grounds. But we are today more likely to grasp the relation of form to flux if we allow our intuition to seek it where it is involved in praxis and in voluntary decision. We must explore our own sense of agency and its relation to the forms. We must examine the pragmatic aspect of our being as well as follow Plato in his study of the contemplative situation. All consciousness, as distinct from sheer sensation, apprehends form and flux in restless interplay, and generally it attempts to influence the outcome. Any philosophical outline of reality that overlooks the conscious situation or attempts to oversimplify it leaves human nature out of the picture. We must never forget that one of the channels through which form makes contact with the concrete is the human mind. And we may find it necessary to describe as mental in type any situation in which form finds a fresh entrance into the concrete ensemble. As A. N. Whitehead has written in his *Religion in the Making*, "In the most literal sense the lapse of time is the renovation of the world with ideas." Certainly we should proceed no further without fresh consideration of mind and its relation to its environment.

Mind in act is choice or decision. Every act of attention, no matter how unproductive it may be, involves at least an element of selection; and when mind fully realizes itself, selection turns to schemes of explanation or action, patterns of possible being, concerning whose relations to the concrete it must pass judgment, theoretical or practical. The vast importance of these schemes, by which indeed we live as conscious beings, is apparent once we admit that the future is concentrated before decisive attention as a system of these

alternative sketches. Consciousness is founded upon apprehension of a future composed of alternatives that invite or threaten. These alternatives are not mere products of the mind. At least to some extent we discover them; we do not create them. They are structures or forms that we come upon. *Mind* penetrates the problematic future. *Body* occupies the present.

Thus the Platonic problem of form in relation to the flux and the problem of mind and body merge when we ask the question: How can the possible, the ideal scheme, "touch" the compact tissue of the concrete, how can the isolated form force its way into the dense atmosphere of fact? Here reason and intuition must co-operate. Reason must ascertain how significant of reality as a whole is the intuition that accompanies our sense of agency through which we contemplate formal pattern as distinct from concretion yet still as relevant to it. Reason may do this through supplementing one intuition by another, thus putting each in its proper setting. In this way the problem of Cartesian interaction of mind and body and the Platonic problem of form and flux may be considered together. "Interaction" is really the interplay of possibility and actuality, and it involves compresence of "mind" and "body." The body belongs to a present situation. Mind is the contact of that situation with an open future. Indeed "interaction" is the very nucleus of reality, and only when mentality approaches the vanishing point as *mens momentanea* does interaction become imperceptible. Here actuality seems to lose its grip upon alternatives and continues within the dominion of one set of principles. Such a situation is called submental. But it is perhaps only the result of what Bergson has called the relaxation of mind.

Analogies pertinent to all this we may actually experience in our own lives and in our awareness of time; namely, the above-mentioned tendency toward automatism that we find in ourselves as we relinquish the effort to maintain our active mentality—that is, our decision and our freedom. If we live largely in the immediate present, we lose sight of possibility and we thus fail to profit by our past

—we simply continue or repeat it. But when we try to “pull ourselves together,” we attempt to recapture a steady vision of possibilities. We try to recapture the future. We may see in this an intuition of the universal situation in terms of which mind and body, form and matter, are related. Such intuition differs from the Cartesian insight in that it is more comprehensive. It includes important material that the Cartesian intuition ignores. It recognizes that the interplay of mind and body is a matter of observable degrees, and it makes contact with the Platonic problem. This does not, of course, prove that such intuition offers us the last word. The last word, as was pointed out above, rightly belongs to the rational sobriety of the philosophical critic, who as a rigorous disciplinarian must consider the coherence of this intuition with the whole body of human knowledge. In this way, and perhaps in this way only, can philosophy retain its ancient dignity and deserve its time-honored designation as “the pursuit of wisdom.”

»» CHAPTER 8 ««

A Historical Postscript

The preceding chapters are an attempt to present the student with philosophy in action rather than with statements *about* philosophical conclusions. Each of the orientations chosen as typical has been presented by the method, and with examples, proper to one mode of speculative system, so that the reader who follows the discussion will, it is hoped, enjoy some participation in each mode of thought. From time to time, however, some reference to the history of speculation has been introduced; and in the present section, a brief historical sketch is offered indicating how the four types of philosophy have succeeded one another through the centuries.

Just as in philosophy proper the major problems are the ones that first make sense to the beginning student, so in the history of philosophy each beginner devises and uses a broad outline map of some kind, which changes as he masters his material in greater detail. For cultural reasons, one would like to have some knowledge of past persons and ideas; for philosophical reasons, it would be quite wrong to give the impression that our study of them here is an excursion into pure speculation, detached from all tradition, or that the reader's own thinking can be profitably so detached; for pedagogical reasons, the present outline map has the advantage of illuminating the relation of ideas, schools, and systems of each period. Because the classical systems have seemed simpler, more confident, and more comprehensive, if more dogmatic in many

ways, than recent ones, we have emphasized their development of the notions of model and specimen, and thus our perspective in this summary gives more space to classical than to more recent thought.

EARLY GREEK PHILOSOPHY

This period runs from about 580 to about 430 B.C. It is sometimes called the "Pre-Socratic" period, because the impact of Socrates so altered the central interests of Greek speculation that he may be considered to have ushered in a new era. The attempt to find some basic common features and laws of nature led, in this period, to the progressive emergence of various sciences, each of which identified one class of phenomena with reference to common properties and laws. As has already been noted, the break with traditional pre-scientific ways of explanation came in Miletus, the cosmopolitan center where the study of physics was first introduced by philosophically minded engineers. In attempting to solve the riddle of the universe, their central interest was in finding the basic stuff—earth, air, fire, or water—common to all real things; the visible and tangible aspects of the world were thought of by them as its "real parts." Thales (flour. ca. 580 B.C.), Anaximander (flour. ca. 570 B.C.), and Anaximenes (flour. ca. 538 B.C.) were the central figures in this Milesian group.

At first, the implications of the "model" point of view were not entirely clear, and its early proponents seem to have been unaware of or uninterested in its implications for the relation of fact to value. Presently, however, at the hands of Xenophanes (flour. ca. 525 B.C.), the new ideas were concentrated in an attack on popular anthropomorphic religious notions; and with the advent of the atomic theory, put forward by Democritus (flour. 400 B.C.) there was a clear recognition of the basic problem.

Shortly after the advent of the Milesian school, the Pythagoreans (from 530 B.C.) in the western section of the Greek world developed and explored the possibilities of mathematics as an instrument of science. The discoveries made with pure mathematics as a tool

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convinced them that a field-and-pattern type of philosophy could be successful in solving all human problems. It is interesting to notice that from the very outset, members of this group differed in their notions of the properties of the "field," and in their way of understanding the nature of "patterns." Their agreement, however, in insisting that the objects of mathematical study (triangles, numbers, ratios) are "real" suggested the need for some extension of the Milesian tendency to identify physical existence with reality.

A further puzzle confronting the earliest philosophers involved the question of how to remain consistent and yet assign some real place to the fact of change. If everything is really made of a single common stuff, change or transformation can only be apparent, not itself real. Heraclitus of Ephesus (flour. 504 B.C.), convinced that change and flow are basic aspects of nature, adopted an "oracular" form of writing in attempting to communicate this insight through the barriers of ordinary language and common sense, which ignore the basic flux of things in favor of static snapshots. Two of Heraclitus' most famous epigrams are: "All things flow," and "You cannot step into the same river twice, for other and yet other waters are ever flowing on." In criticism of this idea, as well as of the Milesians and the Pythagoreans, the logicians of the Eleatic School—Parmenides (flour. ca. 476 B.C.) and Zeno (490-430 B.C.)—argued that a world of sheer change would be unintelligible, and that previous attempts to make a single matter common to everything or to build a universe of unchanging mathematical points (as some of the Pythagoreans tried to) were internally inconsistent. The inconsistency lay in that both Milesian and Pythagorean theorists said: (1) All things are really the same, (2) Change is real. But if A changes to B, and both B and A are water, or air, or physical points, so that they are really the same, how can one say there has been any *real* change at all?

Confronted with this deadlocked opposition of authorities, various attempts at resolution appeared. Empedocles (flour. ca. 460 B.C.), biologist and chemist, seems to have grounded his theories in a

return to naïve realism, emphasizing observation as opposed to reasoning. Direct observation of animals and objects around us, avoiding at once a too exhaustive analytic and a too sweeping speculative vision, seemed to him a plausible basis for philosophy. Democritus, mentioned above, resolved the deadlock with his version of an atomic theory: the atoms stay the same, but alter their relations to one another. The Greek Sophists (about 450-400 B.C.), teachers of literature, law, and culture, took a skeptical point of view; they granted, with the earlier thinkers, that there may be a basic reality behind the world of appearances we experience, but denied that we have any way of discovering what such a reality is. In defense of their doubt, they pointed to the conflicts and contradictions of past philosophical discussion. The moral they drew was that men should confine their search to the expedient, the useful, the practical; that neither in ethics nor in physics could we ever know final truths about nature. (This is radically different from the position of Empedocles, because, as interpreted above, we think of him as *denying* that there is any basic difference between "reality" and "appearance"; the Sophists accepted such a difference, but denied that we could reason from the appearance to the reality.)

SOCRATES

In opposition to the Sophists, Socrates the Athenian (469-399 B.C.), held that it was possible to discover basic principles in questions of human nature and conduct. Since he felt that moral problems could be reduced to the basic one of self-knowledge, he argued that most of the usual skeptical arguments fail to hold. We are not, for example, dependent on sense experience for knowledge of our internal states, nor are we dependent on elaborate theories by which we infer what we actually believe, feel, think, and are. This conviction was put to the test by Socrates. If there are common values that men hold, or basic truths about ourselves to be discovered, then it must be possible to get everyone who participates honestly and methodically in a discussion of these points to agree about them. Not only

should this be so, but if men are wicked because they do not understand themselves—not having thought through clearly, for example, what they really want, and hence perhaps thinking of money as an end in itself—there should be logical contradictions in the thinking and the attitudes of such ignorant men, which inquiry will expose. Socrates set about testing the knowledge of his fellow Athenians, dedicating himself to the inquiry and exposing the ignorance of politicians, craftsmen, and teachers. His honesty and energy in this pursuit did not make him popular. Impartially, he deflated the illusion of wisdom held by the oligarchic political party—representing the wealthier townspeople who had set up an interim dictatorship after Athens had lost a protracted war with Sparta—and the democratic one (that representing democracy in a “town-meeting” form, without adequate checks and balances; in 404 B.C., this party had succeeded in re-establishing itself precariously by overthrowing the oligarchic dictatorship). The oligarchic government warned Socrates to cease and desist, he was saved from probable assassination for not heeding this warning by the revolutionary restoration of the democratic faction. But the democratic statesmen did not care for the impartial cross-examination of Socrates, either. Presumably with the expectation that they would frighten him away, they accused Socrates of irreligion and corrupting the young men of the city. The former charge could carry a death penalty and Athenian politicians had already twice used it to frighten away persons they considered “subversive intellectuals.” Socrates, however, remained in Athens until his case was brought to trial. He was sentenced and sent to his death in 399 B.C. The honesty that was a cardinal principle for him did not help to placate the judges at his trial, to whom he explained that he would not desist from inquiry whatever they ordered him to do, and that if the court were to treat him as he deserved, they would have to reward him as a public benefactor.

Socrates redirected the attention of inquiry from problems of nature toward problems of man and society, and in this redirection underscored a basic philosophical point already tangentially recog-

nized: that any theory of nature must be able to explain man as part of the natural order, just as any theory of man must be capable of extension to explain his place in nature.

SOCRATIC SCHOOLS

Socrates left no written works, and shortly after his death, various schools grew up, each claiming (no doubt with some truth) to be continuing the doctrine Socrates had taught. The Cynics, for example, particularly admired his personal example of self-sufficiency, fortitude, and honesty. They advocated a withdrawal from the decadence of city life to a more rugged, self-sufficing life in a state of nature; they were contemptuous of the courtesies and niceties of civilized society. The Cyrenaics, on the other hand, admired Socrates' concern for practical problems, and his frequent method of discussing these in terms of the pleasure to be gained from various courses of action. Although Socrates himself may have insisted (as Plato shows him doing in the *Republic*) that a good man has more pleasure than a bad one, the Cyrenaic thesis that the best human life was that with maximum intensity of physical pleasure would certainly not have met his full approval. The Megarian group was so fascinated by the methodological innovations made in transferring tactics from formal logic to ethical inquiry that they became devout proponents of the study of methodology. Their technical research became the foundation of some important Hellenistic developments, but they seem to have been too preoccupied with questions of method to devote much time to its application. The Academy, founded by Plato, aimed at extending the inquiry of Socrates from problems of man to those of nature as a whole; it is from Plato's *Dialogues*, dramatic imaginary conversations in most of which Socrates is the central figure, that our best-known picture of Socrates derives. But the existence of the other "Socratic schools" shows that the Academy had not the only interpretation possible of Socratic philosophy.

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PLATO

Plato (427-347 B.C.) has been mentioned just above as a student and an admirer of Socrates. His philosophy, with its graded distinctions of clear and obscure knowledge, of appearance and reality, is the classic example of the approach to philosophy by a "field-and-pattern" route. One of his practical contributions was the foundation of the Academy, which was to be a school where study and research were carried on in pure mathematics and in natural science, as well as in politics, rhetoric, and law. It was not the first institution for higher education in the West, but it was the first to have this scope of interest, which we can attribute to Plato's double conviction that the function of philosophy is to synthesize, and that knowledge can't be neatly compartmentalized into "useful" studies, such as law, and "useless" ones, such as solid geometry: ultimately, an adequate knowledge of legal "measure" may require a synthesis to which solid geometry makes a definite contribution. For the rest, the reader is referred to the treatment of Plato in Chapter 4.

ARISTOTLE

Aristotle, (385-322 B.C.) studied in the Academy for twenty years, and subsequently founded his own school in Athens, the Lyceum. His father had been a physician, and Aristotle himself was well acquainted with medicine, and particularly outstanding as a biologist. Essentially, his philosophy is typical of that described in Chapter 3 as philosophy oriented about the notion of the specimen. It is particularly interesting to see how this reorientation from Plato's position leads to criticism of Platonism by Aristotle, criticism that touches off a debate still in progress. Coleridge sums up one attitude when he says that "all men are born Platonists or Aristotelians." This may make the difference too basic, but there is a radical difference in orientation between Aristotle and Plato that preference for Platonism has led many historians and some philosophers to ignore.

SPEUSIPPUS AND XENOCRATES

After Plato's death, his nephew, Speusippus (ca. 407-339 B.C.), became head of the Academy. Our main source of information about the modifications he made in his uncle's philosophy derive from the criticisms of his position by his former classmate, Aristotle. These modifications seem to have put much more stress on the concrete, dynamic nature of things, in a way that may have roughly anticipated the philosophical position treated in Chapter 5 on the work of art. Some expression of the notion of creation had already appeared in Heraclitus. But Aristotle's reporting is not too satisfactory, for he himself seems not to have recognized this notion of creation as a basis for a possible philosophical orientation, and he admits to being puzzled by some of the statements most typical of that view in the works of Speusippus and Heraclitus.

After Speusippus, Xenocrates (396-314 B.C.) became head of the Academy. He seems to have tried to shift back from emphasis on the concrete introduced by Speusippus to a position giving more importance to the eternal forms; but in this attempt, he gives the forms a transestelial *location*, that cuts them off from relevance to temporal things.

THEOPHRASTUS AND THE LATER LYCEUM

Theophrastus (ca. 370-287 B.C.), Aristotle's successor, apparently felt his teacher's balance of Platonism and naturalistic materialism unstable. In his own thought, he moved from the former position to the latter in interpreting Aristotle. Both of these interpretations lose the notion of organism as central to Aristotle's philosophy. After Theophrastus, the Lyceum where Aristotle had begun large collections of documents and specimens for study, went on collecting and editing, but failed to carry on any program of fruitful investigations.

HELLENISTIC PHILOSOPHY

After the death of Aristotle, philosophy is characterized less by speculative insight and intellectual adventure than by caution and a fear of being deceived. The fortunes of philosophy passed into the hands of four major schools that continued the Greek speculative tradition in the Roman world. These schools were the Academy, the Lyceum, the Epicurean, and the Stoic. The Epicurean, founded by Epicurus (341-271 B.C.), advocated a modification of the Cyrenaic view, and stressed the desirability of "freedom from perturbation"; they thought of such freedom as attainable by a physical insulation from the sharp corners of one's environment. Their ideal life may be pictured as that of a man with no family or public responsibilities to perturb him, sipping tea in his garden behind a high, spike-topped wall. To free men from "fear of death and fear of the gods," two frequent sources of psychological perturbation, the Epicureans advocated the atomic theory, which was also compatible with their ethical ideas.

The Stoic school founded by Zeno of Citium (333-261 B.C.), held that "freedom from passion" was the condition of happiness, and this they thought could be attained by inner discipline. Their ethics stressed self-discipline and an impersonal sense of responsibility. They viewed the world on the lines of a diagram-oriented theory, in their version of which the whole universe was identified with God, and its events were predetermined in full detail. "Freedom," they argued, comes from seeing ourselves in our true perspective, as parts, and not very important ones, of the total cosmic scheme.

After Xenocrates, the Academy entered a period of skepticism, which lasted until about 50 B.C. This was a natural outcome of the doctrine that the only clear knowledge we can have is knowledge of Platonic forms, but that these forms are located outside of the "sensible heavens." These philosophers held that human unhappiness came basically from frustrated expectation, and that "freedom from intellectual commitment" was the condition of a happy life. This

freedom was gained by systematically destroying our illusion that we can know the world about us with any certainty.

The Lyceum, also called the Peripatetic school, shifted from a program of collecting specimens to one of collecting and editing documents. We might parody their implicit notion of happiness by saying that their ideal was "freedom from noise in the library."

Until the Academy gave up its skeptical doctrine, these major schools therefore agreed that the major concern of philosophy is ethics, and that happiness is to be found in some kind of self-sufficiency within, and even insulation against, the individual's natural and social environment. None of these schools embarked on very notable speculative ventures, and none had a doctrine capable of much popular appeal. Many citizens of the Roman world sought for a resolution of their problems in religion; and Christianity, with its vision of divine love and human brotherhood, finally became the dominant religion.

By the second century A.D., the Academy had reinterpreted Plato's philosophy into a philosophical-religious doctrine that is known as Neo-Platonism. The philosopher Plotinus (204-269 A.D.) was the most significant proponent of this reinterpretation. Essentially, Neo-Platonism accepted the doctrine of ideas with a transesterial location, and held that the human soul sometimes actually journeys "yonder," escaping from the physical world. Many of Plato's myths, taken as literal doctrine, fit this religious interpretation. The soul was believed reincarnated in one human career after another, until at last, if it achieved purity, release was obtained from the wheel of reincarnation. To the twentieth-century reader, it probably seems that bending all efforts toward a final absorption into an eternal absolute, an "awful fixture of eternal light," is not the ideal of human life, but to the Hellenistic Neo-Platonist, this prospect of escape from mundane living seemed supremely desirable. In this version of a field-and-pattern type of philosophy, the role of the field seems almost wholly overlooked or denied, with a resulting one-sided philosophy of pure pattern.

CHRISTIANITY THROUGH THE MIDDLE AGES

It was not until the fifth century A.D. that St. Augustine (354-430), succeeded in expounding "Christian philosophy." This philosophy was basically Platonic in character, but with a God who not only was the maker of the world, but was also eternal like the form of the good, and in whose mind the Platonic forms were contained as ideas. The relation of such a God to the world he had created, and the extent to which philosophy and reason could legitimately inquire into questions of doctrine (such as this very relation), were a central theme of discussion in Western philosophy. So was the "problem of universals"; if Platonic forms exist as ideas in the mind of God, where do our human acts of seeing such forms fit the cosmic picture? Are we sharing in God's thought, or are we really not grasping such ideas at all, but only thinking that we do? Or is some less extreme interpretation preferable?

Naturally, these two questions opened the way for vigorous philosophical discussion, but within the basic framework of a Platonic philosophy. Occasional mystics tended toward the notion of creation in their speculation, occasional scientists toward the specimen, but until the thirteenth century, the diagram was dominant. Then, with the rediscovery of Aristotle through contact with the Mohammedans in Spain, a new dimension was discerned.

St. Thomas Aquinas (1225-1274) found in Aristotle's philosophy an excellent starting point for an account of the world that would separate, as the speculative tradition from St. Augustine's time had not, science, philosophy, and theology, and grant each a certain autonomy within its own proper realm of inquiry. Ultimately, human inability to reason out the answers to basic questions in philosophy and science showed the need and the place for theology; but faith and reason could never contradict, and reason could be used to justify faith. The chief difference between this point of view and that of Aristotle seems to lie in the fact that the pluralistic character of the world as seen by philosophy is construed as a limita-

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tion of human understanding, not as a property of things as they are or as God knows them. Ultimately, a unified point of view transcends distinctions when reason is supplemented by faith and science by theology.

MODERN PHILOSOPHY

After a complex transition period, in which the prestige of Aristotle as an authority rose, then declined in the face of Renaissance enthusiasm for more humanistic classical authors, the tone of modern philosophy was set by Descartes (1596-1650). In his speculative system, Descartes seems to alternate between two different basic philosophical orientations. (It may be significant to note that they are both strong positions from which to oppose Aristotelianism). In treating God and the soul, Descartes stays very close to Augustinian tradition; this aspect of his work involves a continuity between medieval thought and his philosophy. One variation worth noting, however, is Descartes's theory that when I am thinking or perceiving, I am thinking about or perceiving *ideas in my own mind*, not objects of some other kind. This has antecedents in the medieval concern with the object of God's thought, but its transfer to the human mind leads to very awkward problems. While Descartes cannot doubt his own existence (for that existence is presupposed by his very act of doubting it), and is certain of the existence of God, the existence of an external world, distinct from his subjective ideas, must be inferred by an intricate chain of reasoning. In treating this external world, Descartes holds that it consists solely of units of extended matter in motion; here he breaks sharply with the medieval tradition, and defends a position very akin to a classical or Democritean atomism. This poses what proves an impossible problem: one's body exists in the world of extension, one's mind is a substance of a radically different kind, yet the two interact; how can a mind and a body so disparate in kind possibly interact? There is no way, given the initial definitions of Descartes's system, of understanding or imagining this interaction. Stated in

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this way, the problem would seem to result from accepting a field-and-pattern approach to the realm of thought, but a model notion in dealing with the rest of nature. The two orientations are not able to be fused in Descartes's system, and the "mind-body" problem marks the split between the two points of view.

John Locke (1632-1704), a British physician and diplomat, reacted against Platonism (both that of certain earlier British thinkers, known as the "Cambridge Platonists," and that of Descartes) much as Descartes had reacted against Aristotelianism, and with a similar result. His system and Descartes's have many basic similarities. Locke, like Descartes, divides knowledge into three kinds: that of one's own existence (intuitive), that of God's existence (demonstrable), and that of other things (probable); like Descartes, he analyzes knowing and perceiving as the mind looking at its own subjective "ideas"; like Descartes, he believes extension and motion are the objective properties of things, all other qualities are contributions of a human perceiver. But, unlike Descartes, Locke orients his system around the notion of substances—kinds of things recognized by the mind from encounters with individual instances. And he finds a nonmathematical, creative aspect of human thought in such ideas as those of "substance" and "power," ideas that suggest some sort of dynamic, emergent unity between nature and the creative activity of the mind. Like Descartes, Locke seems to have a system divided between two basic notions. His treatment of the anatomy of the contents of the mind, tracing successive levels of organization of our "ideas," illustrates the "specimen" notion at work, and is an important stage in the history of psychology. But when he treats the dynamics of the mind, as opposed to its more readily discoverable static contents, there is a notion of "creation" introduced. (This duality of notions is illustrated well by the treatment Locke gives to time and duration in his *Essay*.)

On the European continent, a series of attempts were made to revise Descartes's philosophy so that it would be consistent, and in England the same process was undertaken with the philosophy of

Locke. The Continental group emphasized logical consistency, and are usually called "rationalists," while the British thinkers rather emphasized conformity to experience and experimental testability, so that they are usually called "empiricists." But the basic opposition of these two lines of development does not become wholly clear until both have reached their termination, when a deadlock develops between them.

To resolve Descartes's dilemma, Spinoza (1632-1677) suggests a radical unification of God, mind, and body, so that the two latter are simply different aspects of the same thing. This is eminently reasonable in the sense that the resulting system is coherent and unified, but it seems to contain as drastic a problem as Descartes's view had. If all things are parts of one reality, and their differences only apparent, what explanation of the existence of such apparent differences (of the facts of individuality as we know them and experience them) can be given within the system?

A less drastic resolution was proposed by Leibniz (1646-1717), in his suggestion that there is no dead, inert "extended substance," but instead the world is made up of force centers ("monads") that differ only in degree, not in kind, from "souls." By making these monads exist contiguously, and having each "reflect the whole universe from its point of view," Leibniz avoids the problem by reducing the system to a pure field theory, taking out the model-oriented features that he thought caused the trouble. We have found many of Leibniz's ideas helpful in framing a philosophy of creation. In many ways he anticipates Bergson and Whitehead.

Meanwhile, in England, Bishop Berkeley (1685-1753) set out to correct certain inconsistencies apparent in Locke. In general, his arguments showed that if philosophy were to be grounded in sense experience, those doctrines in which Locke had introduced some creative, intuitive contact with a nature distinct from static mental pictures were not defensible, because they could not be analyzed into units of sense perception. Berkeley therefore rejected Locke's notion of "substance" as external to the mind, of "power" as the

action of such external substance, of "primary qualities" (shape and extension) as objective properties of things. Actually, Berkeley first showed that, in many cases, Locke's conclusions could not be presented as simple facts of sense experience; but he then proceeded to argue that a Platonic theology, including the notions of God and moral spirits or souls, was necessary to bring coherence into the atomic sense-data to which his attack limited Locke, and indeed that without such supplementary assumptions, the atomistic account would not have been possible.

David Hume (1711-1776), however, retained the canon of method that Berkeley first applied, and rejected the Platonism that the latter had defended. Hume achieved great consistency in his analysis, which was discussed above in the treatment of "psychological atomism." In effect, Hume resolved Descartes's problem in the opposite way from Leibniz where the latter reinterpreted "extended substance" as basically composed of units of a psychological sort, the latter found "thinking substance" to consist of chains or bundles of inert "ideas" and "impressions." Nor could Hume find anything observable corresponding to the "self" that Descartes and Locke were both so sure existed. The rigorous use of an analytic method left no Cartesian "thinking substances," distinct from "extended things," in nature.

With the sharpening opposition between rationalists and empiricists, the need for some resolution of the deadlock was met by Immanuel Kant (1724-1804), in the form of his critical philosophy. Like Aristotle, Kant balanced the position of the field-oriented rationalists against the atomism of Hume, and, working in terms of the way in which our minds organize sensation into intelligible unity, derived a series of sharp distinctions reminiscent of Aquinas and Aristotle. Kant's analysis of the mind's synthesis of the raw data of perception into a science, an ordered system of concepts, was the model for a part of the treatment of the anatomy of thought in Chapter 3 on the organism-oriented type of speculation. Unlike either Aquinas or Aristotle, however, Kant felt that there

was no way to arrive at theoretic knowledge of things that could not be observed as objects in our experience—God, freedom, and immortality, for example. With this restriction, philosophy breaks into three radically distinct frames of reference: knowledge of a theoretic sort is possible only of objects in our experience; ethics depends on a moral sense and an inner awareness of freedom that fall outside the domain of science; aesthetics has to do with a sensitivity to beauty that is distinct both from science and from morality. The judicious balancing of Leibniz and Hume comes out well in Kant's treatment of science, but his own speculative position emerges more clearly in his treatment of morality, purpose, and beauty. One of the features that Kant felt to be most revolutionary in his system was its limitation of knowledge to possible *human* experience; there is no way of knowing how close to the nature of "things in themselves," existing apart from a human observer, our categories of interpretation can come. This has no relevance to our practical actions, but only to the limits of our theoretic knowledge. In practice, men always feel they ought to act in a way that would be reasonable in a world ordered by God, in which they enjoyed freedom and immortality. But for Kant, this indispensable practical orientation is not equivalent to scientific or philosophical proof. The status of freedom, immortality, and God as they figure in three versions of an organism-oriented critical philosophy has been discussed above, in the concluding section of Chapter 3.

After Kant, as after Aristotle, attempts were made to override the sharp distinctions set forth in his system. The most prevalent attempt to do this was to argue that the inner "self" of man, which orders our subjective experience, exists in intimate union with a God or an Absolute that orders the course of objective nature. Evidently, various lines of exploration were open. One might try to make this natural order an object of knowledge or reorient philosophical method toward ethics or aesthetics, and thus accept a sense of beauty or one of morality as a criterion of validity. The most influential of these attempts was that of Hegel (1770-1831), who

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held that the laws of thought and the development of history were the same: both insight and progress are achieved through exploring, understanding, and "transcending" apparently irreconcilable contradictions. Hegel's basic plan of this process was taken over by Marx (1818-1883), to become the basis of dialectical materialism; but where Hegel gave mind priority over the nonmental, and posited an Absolute progressively realizing itself through history, Marx reversed the emphasis, and identified the laws of history and of thought as exemplifying a common material character in nature and in mind.

The impact of science in the late nineteenth century favored an atomistic orientation in some areas, but the concept of evolution lent itself more easily to the notions of the diagram and of creative activity. Subsequent physical discoveries and technological developments have led science increasingly toward a diagram orientation, with a resultant effect on philosophy. The effect has not always been one of mere following: in existentialism, we see a contemporary movement in philosophy that takes man's inner awareness of his free creativity as its basic fact; in logical positivism, we see a stubborn adherence to more atomistic criteria of meaning and verification. In the philosophies of Bergson and Whitehead, the aesthetic-emergent point of view has attained new and vigorous expression, in the former opposed to, in the latter combined with, a more traditional diagram theory. With the reawakening of interest in Plato and Aristotle, and the new successes of mechanistic technology, our contemporary scene presents a theater of discussion for proponents of all of the types of philosophical orientation sketched in this book. That is why, without a preliminary classification to serve as a compass, and without a historical chart of the course of speculation in the West, we are apt to find the contemporary scene confusing.

Among the speculative hypotheses at present readily available to the student of English and American thought, perhaps the systematic philosophy of the late A. N. Whitehead (1861-1947) is the most comprehensive. In this intricate system, to be mastered only

after long and persistent study, the several features of reality are discerned and an effort is made to unite them within a consistent structure. In this scheme, which may seem to some students an overingenious jigsaw puzzle, the formal patterns of the logician and the mathematician, the structures and periodic routines of the mechanists, the self-maintenance of the organism, and the creative initiative of decisive choice all find a place. Whitehead has seen fit to subordinate the first three considerations to the last. He grants hegemony to the act of decision emergent in creativity and he resolutely faces the difficulties that result from such a commitment. The student may have difficulty in accepting the doctrine that every event—and for Whitehead events are the ultimate units of reality—that every event, even the most “trivial puff of existence” is a center of creative choice, however limited its scope may be. These choices or decisions vary enormously in degree, but insofar as they can claim existence at all, they must face their environment with a moment of novelty, a contribution that their successors must accept and in some way take into account. These decisions “prehend” or bring together in organic concretion both mathematical order and physical routine. As realizations of novelty they present us with aesthetic “importance” or values. So bold a hypothesis calls for careful scrutiny. One can only evaluate it properly after having tried conscientiously to do without it. Speaking by and large, the philosophical positions implied in Chapters 5 and 6 may be described as Whiteheadian in conception.

Further Reading

For further background in the history of philosophy the student may consult:

- Stallknecht, Newton P., and Brumbaugh, Robert S. *The Spirit of Western Philosophy: A Historical Interpretation Including Selections from the Major European Philosophers*. Longmans, Green, 1950
Fuller, B. A. G. *History of Philosophy*. Rev. ed., Holt, 1945
Montague, William Pepperell. *Great Visions of Philosophy*. Open Court, 1950

The following works may be of interest to the student in that they either directly supplement or contrast with the argument of the authors of this book or indirectly illustrate it by approximating one of the ways of thought described here.

- Alexander, Samuel. *Space, Time, and Deity*. 2 vols. Macmillan, 1920
Ayer, A. J. *Language, Truth, and Logic*. Rev. ed., Dover Publications, 1931
Bergson, Henri. *Creative Evolution*. Holt, 1931
——— *The Creative Mind*. Philosophical Library, 1945
——— *Matter and Memory*. Macmillan, 1911
——— *The Two Sources of Morality and Religion*. Holt, 1935
Black, Max. *Language and Philosophy*. Cornell University Press, 1949
Blanshard, Brand. *The Nature of Thought*. 2 vols. Macmillan, 1940
Boutroux, Emile. *The Contingency of the Laws of Nature*. Open Court, 1916
Burnham, Philip, and Wheelwright, James. *Introduction to Philosophical Analysis*. Holt, 1932
Carnap, Rudolf. *Philosophy and Logical Syntax*. London. Kegan Paul, Trench, Trubner, 1935

THE COMPASS OF PHILOSOPHY

- Cassirer, Ernst *An Essay on Man*. Yale University Press, 1944
- Collingwood, R. G. *An Autobiography*. Oxford University Press, 1939
- *Speculum Mentis*. Oxford University Press, 1924
- Conant, James B. *On Understanding Science*. Yale University Press, 1947
- Cornford, Francis M. *Before and After Sociates*. Cambridge University Press, 1932
- Dewey, John *Reconstruction in Philosophy* Enl. ed., Beacon Press, 1948
- Edman, Irwin *Four Ways of Philosophy* Holt, 1937
- Fite, Warner *Moral Philosophy*. Dial Press, 1925
- Gilson, Etienne H. *Being and Some Philosophers* Toronto: Pontifical Institute of Mediaeval Studies, 1949
- *The Unity of Philosophical Experience*. Scribner, 1937
- Holt, Edwin B. *The Concept of Consciousness*. Macmillan, 1914
- James, William. *Essays in Pragmatism*, ed. by Alburey Castell, Hafner, 1948
- Lewis, C I *Mind and the World-Order*. Scribner, 1929
- McKeon, Richard *Freedom and History*. Noonday Press, 1952
- Margenau, H. *The Nature of Physical Reality*. McGraw-Hill, 1950
- Maritain, Jacques. *Existence and the Existent*. Pantheon Books, 1948
- Pepper, Stephen C. *World Hypotheses*. University of California Press, 1942
- Royce, Josiah *The World and the Individual*. 2 vols Macmillan, 1900, Vol 1
- Russell, Bertrand. *Human Knowledge, Its Scope and Limits*. Simon and Schuster, 1948
- *The Problems of Philosophy*. Holt, 1912
- *Religion and Science*. Holt, 1935
- Ryle, Gilbert *The Concept of Mind*. Hutchinson's Universal Library, 1949
- Santayana, George. *Scepticism and Animal Faith* Scribner, 1923
- Sartre, Jean-Paul. *Existentialism*. Philosophical Library, 1947
- Sayers, Dorothy L. *The Mind of the Master* Harcourt, Brace, 1941
- Stevenson, Charles L. *Ethics and Language*. Yale University Press, 1950
- Ushenko, Andrew P. *Power and Events*. Princeton University Press, 1946
- Wahl, Jean André. *The Philosopher's Way*. Oxford University Press, 1948
- Weiss, Paul. *Man's Freedom*. Yale University Press, 1950
- *Nature and Man*. Holt, 1947

FURTHER READING

- Whitehead, Alfred North. *Adventures of Ideas* Macmillan, 1933
——— *Modes of Thought*. Macmillan, 1938
——— *Religion in the Making* Macmillan, 1926
——— *Science and the Modern World* Penguin Books, 1938 (Macmillan, 1926)
Wild, John D. *An Introduction to Realistic Philosophy*. Harper, 1948

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